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THELAZIASIS OF THE EYE AND ITS ADNEXA IN MAN.

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Thelazia, a genus of worms allied to the *filaria*, includes several species parasitic in the eyes of animals. One of these, *Thelazia callipaeda*, is found in the eyes of dogs. In this case it was found in a papilloma, on the lower lid of a missionary in West China. The wart had been present many years, lately had itched and grown larger, and was found to contain larvae of this species.

The most common nematodes, or true round worms, infecting man, are *Ascaris lumbricoides* and *Ankylostoma* (hookworm). These parasites involve the intestinal tract, and any pathologic effect which they may exert upon the eye, is indirect.

Among the nematodes, Yorke and Maplestone¹ list the genus, *Thelazia*, as a parasitic worm directly involving the mucous membrane of the eyes of mammals and of birds. Railliet² recognizes six species of *Thelazia* as parasites of the eyes of mammals. Among these he includes *Thelazia lacrimalis* (*filaria lacrimalis* or *palpebralis* of certain previous observers), a nematode found in the eye of the horse; *Thelazia rhodesi*, a species commonly affecting the eyes of cattle; and *Thelazia callipaeda*, a species found in the eyes of dogs.

During the past decade there have been seen in China several cases of ocular nematodes in man. The first was reported by Stuckey³ in 1917, under the title of "Circumocular filariasis". He removed four white, thread like worms (8-13 mm. long) from the conjunctival fornix of one eye of a Chinese male, 25 years old. According to the patient's story, the worms had been in the eye for about a year. In the same paper Stuckey reports the finding of similar worms in the eyes of a pet dog near Peking. These worms were removed by a friend and given to Stuckey, who sent them, together with the human material, to Houghton for

examination. Houghton⁴ studied them and in the light of all the authorities available to him at that time, decided that the specimens from the two sources were identical, and called them *Filaria palpebralis* (Syn: *Circumocular filaria*).

In the same year Trimble⁵ reported having removed, at a hospital in Fukien province, two small worms from the superior conjunctival fornix of one eye of a Chinese farmer. He described the worms as females of the same species as those described by Houghton. In Trimble's patient, there had been for three months a severe and increasing pain in the eye, with epiphora and a marked ectropion due to paralysis of the lid sphincter. Following removal of the worms, the pain and epiphora disappeared, and three weeks later the tone of the paralyzed muscle was restored fully one-half.

In 1919, Fischer⁶ described worms (8 specimens), similar to Stuckey's, which Dr. Assmy, in 1917, had removed from the eye of a native dog at Chungking, Szechuan province, China. Fischer referred to his specimens as *Thelazia*. This identification on his part was evidently based upon the work of Railliet and Henry⁷ who gave the name of *Thelazia callipaeda* to an eye worm which they had found common in dogs in the Punjab in 1910.

In discussing Stuckey's and Trimble's specimens, Ward⁸ was not inclined to agree with Houghton's classification of Stuckey's material, as being

Filaria lacrimalis (*Filaria palpebralis*), because of his belief that this is a parasite of the conjunctiva only of the horse. In the meantime Leiper,⁹ on the basis of Houghton's description and photographs, gave it as his opinion that the ocular nematodes from man, as well as those from the dog in China, belonged to the species *Thelazia callipaeda*. But in order that his opinion might be either confirmed or refuted, Leiper suggested a more detailed examination of Stuckey's material, in the light of Railliet's classification.

The opportunity has been given to Faust¹⁰ to clarify this matter. He reports, after examining Stuckey's and Houghton's material, and other dog and rabbit material of his own in Peking, that all the material belongs to the species *Thelazia callipaeda*. Faust's conclusions are given additional significance by the findings in a recent case of the writer's, the salient facts of which are the following:

History: A Canadian missionary, male, aged 52, was referred to the writer on March 4, 1927, by the Division of Dermatology of the Peking Union Medical College, for the excision of a wart like papilloma (about 3 mm. x 4 mm. x 3 mm.) of the skin of the lower right eyelid, not far from the internal canthus. The patient had had the papilloma for many years, perhaps all his life. But during the last fifteen months he had become increasingly conscious of it. It itched him a great deal and was slowly getting larger, but it had never become inflamed. He frequently rubbed the papilloma, a performance which often produced a crusted scab around its margin. There was no history of conjunctival inflammation, or of epiphora.

About three months prior to his visit to the writer, the patient had a pet dog die from worms which had invaded the lungs. For some weeks the dog had been subject to spasmodic attacks of cough which were often preceded by vomiting. The dog also suffered from a severe irritation of both eyes, which caused him to rub his eyes vigorously with his paws. The patient was very

fond of this dog, and patted him frequently.

The papilloma was removed under novocain-adrenalin anesthesia, and sent to the pathologic laboratory for examination.

Pathologic Examination. Report by Dr. C. H. Hu of the Department of Pathology. Section shows skin tissue lined by stratified squamous epithelium, which is markedly hyperplastic, forming papillary projections and solid masses extending into the cutis for a short distance. The cells in these solid masses show a moderate number of mitotic figures. The surface of the papillary projections is covered with a thick layer of cornified cells. In the tissue just beneath the epithelium there is well marked lymphocytic infiltration. In some of the epithelial folds, and in one section of the sebaceous glands a few parasites are present. These have been referred to Dr. Faust for identification.

Diagnosis: Papilloma of skin of face with chronic inflammation; parasites in the epithelial folds and in the sebaceous glands.

Parasitologic Examination. Report by Dr. E. C. Faust of the Division of Parasitology. The sections examined show several invaginations in the skin, containing larval nematodes, some being cut in longitudinal and some in transverse section. In each case there are several worms in each pocket. The structure of the integument of the worms and the peculiar type of oral capsule definitely permit a diagnosis of *Thelazia callipaeda*, the "eye worm" commonly found in the conjunctival sac of dogs in China and India, and definitely known in the adult condition in at least one human case from North China (Stuckey, C. M. J., 1917). This is the first record of this larval stage from man or other hosts. (See Figs. 1-4.) Plates 5 and 6.

This patient apparently became infested from his pet dog. From the history of his case it may be inferred that the dog's eyes were infected with worms of the species, *Thelazia callipaeda*, and that the patient, thru contact with the dog, had carried ova or

larvae of the adult worms, by the medium of his own hands, directly to the papilloma which he was in the habit of rubbing. The epithelial pouches of the papilloma evidently provided satisfactory conditions for these larvae to develop, for they were in a sufficiently late stage at the time the specimen was put into hardening fluid, to permit of definite identification by Dr. Faust.

This case offers no evidence concerning the duration of the larval stage of *Thelazia callipaeda*. The period of fifteen months given by the patient as the time during which he was becoming increasingly conscious of the papilloma is undoubtedly too long for the larval stage. But the large size and late stage markings of the larvae indicate that their transformation into adult worms was not far distant. Furthermore, from the three other cases of ocular nematodes reported in humans from China, it may be concluded that the adult worm in

this case would have found a perfect habitat in the conjunctival sac of its larval host.

Among the points of special interest in this case, might be mentioned Dr. Faust's statement that this is the first record of a larval host of this species, *Thelazia callipaeda*; also that this larval host happened to be a Caucasian living in West China. All the evidence now at hand points to the dog as being the optimum host of the adult stage of this species of eye worms, but that man may also be a host; also that man serves well as a larval host thru the medium of epithelial pouches in his skin. It may be well to add that since parasitologists have agreed that this ocular nematode of mammals belongs to the genus *Thelazia*, the term thelaziasis should be employed to represent both human infection with the worms and human infestation with the larvae, rather than the term filariasis.

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OCULAR PEMPHIGUS.

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The variety of clinical types of the rare disease designated as ocular pemphigus, is here brought out by three cases; general with ocular lesions, primary of skin with secondary ocular involvement, and primary in the eye. The uncertainty of diagnosis and wide variety of treatment are illustrated. Reported from the Section on Ophthalmology, Mayo Clinic, Rochester, Minnesota.

Ocular pemphigus, also known as pemphigus conjunctivae, is a rare disease affecting the conjunctiva. It may occur in the eyes alone or in conjunction with generalized or skin pemphigus. Its rarity is shown by the incidence of about one in 10,000 cases quoted by various investigators. Frankel reported five cases of pemphigus in 45,000 ophthalmologic cases, and Pergens two in 22,000. De Wecker had seen only four cases in his lifetime of practice, and Darier three.

Prior to Cooper's description of the disease in 1858, ocular pemphigus was unknown as an entity. Cases undoubtedly pemphigus were called xerosis. Stellwag called the disease "syndesimic degeneration," and Kreis, "essential shrinking of the conjunctiva." In 1879, von Graefe clearly classified this type of disease as pemphigus and gave an excellent description of it.

The cause of ocular pemphigus is unknown, altho Parsons states that Crocker thought it due to the action of bacterial toxins on the nerve centers, thus putting it in a class with herpes or neuroparalytic keratitis. Attempts to attribute it to a definite bacterium have failed so far, altho some bacteriologists have thought *Bacillus xerosis*, a pseudodiphtheria bacillus, the causative factor; this, however, has never been proved. Both Uhthoff and Löffler found the fluid in the blebs sterile, tho later on, especially when the blebs were broken, they often contained strains of staphylococci, streptococci and *Bacillus xerosis*.

Dermatologists at present recognize four forms or types of pemphigus, altho admitting that some of these may be, and probably are, transitional

or later forms of one of the other types. The types are classified as acute, chronic (pemphigus vulgaris), pemphigus vegetans, and pemphigus foliaceus. The first type is an acute manifestation of the disease and runs a rather rapid course, with the formation of blebs and severe general constitutional symptoms, and often ends fatally. Whitman gives the mortality as 75 per cent. In the chronic type (pemphigus vulgaris), onset is not so sudden and there may be successive crops of blebs. The mucous membrane may or may not be affected and, altho the prognosis is grave, it is more favorable than in the acute type. In pemphigus vegetans, the bullae persist and in the subsequent excoriations vegetations grow. Ravogli thinks this is merely a type of one of the other forms of pemphigus with the vegetative growth added. Pemphigus foliaceus is gradually progressive and almost fatal. The lesions often affect the mucous membranes, as well as the skin, heal slowly and remain as excoriations and crusts. This type of pemphigus, first described by Cazenave, is rare. As noted by Sutton, the onset of the disease is often preceded by a sensation of chilliness followed by fever. Burning and itching of the skin are usually present. This train of symptoms was seen in one of my cases.

It is well established that pemphigus usually occurs without ocular involvement. The coexistence of pemphigus of the eye with general pemphigus is rare, according to de Schweinitz, altho when other mucous membranes are affected it is not uncommon to find the conjunctiva also involved. The basic process, as can be seen from the histologic examination of the conjunctiva, is essentially the same as

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that of the skin. Ocular pemphigus as compared to general pemphigus is exceedingly rare. One must always remember the fact stated by Davis, in discussing the relation of the eye and certain diseases of the skin, that the eyes may be affected by toxins produced by a generalized dermatologic condition. De St. Martin thinks that ocular pemphigus may be due to syphilis, as in his case, where it occurred in conjunction with inherited syphilis. He bases his conclusions on frequent positive Wassermann tests and the effect of specific antisyphilitic treatment. This has not been confirmed by other investigators, however; but the fact has been noted that pemphigoid conditions of the eye may be present in connection with other diseases of the skin. This fact is well demonstrated in one of my cases, in which ocular pemphigus existed concurrently with erythematous lupus of the skin.

The symptoms of pemphigus conjunctivae or, better, ocular pemphigus, are divided into four types by Parsons: (1) blebs on the skin; (2) blebs on the mucous membrane; (3) blebs on the conjunctiva alone, and (4) essential shrinking of the conjunctiva only. Edema and swelling of the conjunctiva, he thinks, are practically always found at some stage together with lymphocytic infiltration, altho the latter has been reported absent in one instance.

The ocular symptoms in order of their occurrence are: (1) general dryness or xerosis; (2) the formation of blebs, altho this may frequently be missed, as they often rupture early on account of the extreme delicacy of the conjunctiva, and (3) usually itching and burning of the eyes and redness of the conjunctiva. The affliction is usually bilateral, only one monocular case having been reported. As a late stage marked shrinking of the conjunctiva occurs. This in itself cannot be considered pathognomonic, as Pergens notes this condition also in trachoma, psoriasis, xeroderma pigmentosum, ichthyosis and lupus. Adhesions between the bulbar and palpebral conjunctiva occur which may result in symblepharon, and even entropion may

result; this occurred in one case in my series. Later, the cornea becomes dry, vision is lost and even ulceration occurs. Greyish-white mucous exudates occur in the conjunctiva. Recurrence is not uncommon.

Distinction must be made between xerosis and pemphigus. The characteristics of pemphigus as given by Norris and Oliver are as follows: (1) bullae, (2) ruptured blebs, (3) essential shrinking of the conjunctiva, and (4) dull atrophic cornea. Pemphigus was formerly confused with Dühring's disease (dermatitis herpetiformis).

When combined with pemphigus of the skin, ocular pemphigus is best treated by the dermatologist. The treatment of the eye is purely symptomatic, consisting chiefly in keeping the eye moist with mild solutions and the use of a bland oil to protect the cornea.

CASE 1. General pemphigus with ocular manifestations.—A married woman, aged fifty-three, was admitted to the Mayo Clinic September 7, 1925, as an emergency case, having been sent here after treatment elsewhere in a hospital. She complained chiefly of her eyes which were severely inflamed, and of a generalized eruption of the skin and also an eruption on the mucous membrane of the nose, throat, mouth, vagina, and rectum. She had been well until the onset of the present illness. July 19, 1925, she first noticed slight itching of the eyes, followed the next day by swelling of the lids and severe chills, at which time epistaxis also occurred. By July 25, the eyes were severely inflamed and vision impaired. The skin of the body was red and the temperature was 104°F., but the patient felt chilly, the mouth became sore and there was a variola like eruption over the abdomen, chest, arms, and face. She was seen by a number of physicians and a tentative diagnosis of measles was made. The lids became markedly swollen, there was a discharge from the eyes, and the mouth and throat were very sore, as were the vagina and rectum. On account of the condition of the eyes, which was steadily getting worse, she was sent, August 2, 1925, to an ophthalmologist who

placed her in a hospital. At this time she was very ill with a generalized eruption of the skin and marked prostration. The mucosa of the mouth, nose, vagina and rectum had sloughed in large areas, leaving raw bleeding surfaces. The Wassermann test at this time was negative and the blood count normal. The lids were greatly swollen and firm, and the skin had sloughed from both upper and lower lids. When the lids were elevated with retractors a greyish exudate was seen covering the palpebral conjunctiva; the exudate came off easily and left raw surfaces. The cornea could be seen but indistinctly on account of the swelling of the bulbar conjunctiva. One week later the condition was much improved, there was less prostration, the eruption was fading and the temperature was down to 100°F. In the meantime, the mucosa of the mouth, nose and lids had sloughed off at different times in large pieces, with foul discharge from the nose and considerable discharge from the eyes. At this time the cornea of each eye was clear, as well as could be determined with the swelling present. Cultures made from the conjunctiva showed abundant growth of *Staphylococcus albus*. The patient's condition improved until about the middle of August, when the cornea became involved.

On admission to the Mayo Clinic the patient was undernourished, the eyelids and face were covered with dark red papules and irregular elevated plaques resembling erythema multiforme. The lids were markedly swollen and edematous and of deep red color with plaques. The palpebral and bulbar conjunctivae showed erosion and marked injection. Limited ocular movements could be obtained with difficulty, on account of the edema. In the right eye the cornea showed sloughing of the superficial layer with deep infiltration. There were necrotic areas extending from the lower limbus to the pupillary margin. The chamber was formed; no view of the fundus was obtained. In the left eye, necrotic areas were scattered thruout the cornea in the deeper layers; no view

of the fundus was obtained. There was general sloughing of the mucous membranes of the palpebral and bulbar conjunctiva, nose, mouth, vagina and rectum. Occasionally a heart beat was missed and there was a slight systolic murmur which was considered to be of no consequence. The systolic blood pressure was 115 and the diastolic 74, the pulse was 84 and the temperature 99.2°F. The urine was normal except for a few red blood cells (graded 1), and pus cells (graded 2). The hemoglobin was 75 per cent; erythrocytes numbered 4 260 000 and leucocytes 6,300. The differential count was normal in its percentage and the blood Wassermann test was negative. The general examination was otherwise essentially negative.

The dermatologic examination revealed areas of exfoliation over the forehead; papules and dark red plaques over the lids, around the mouth and over the chin resembling erythema multiforme, numerous bullae with flaccid walls and watery contents, exfoliation and some red papules over the abdomen, anterior and posterior parts of the thorax and the arms and thighs; erosions and ulcerations with greyish-white membranes covering them, altho bullae were not seen along the gingival margins and in the mouth. The course had apparently been formation of bullae with rupture and subsequent exfoliation. The diagnosis from the dermatologic standpoint lay between pemphigus foliaceus, pemphigus vulgaris and erythema multiforme. The final diagnosis was pemphigus foliaceus.

The temperature remained about 99°F. for a few days, finally dropping to normal. The patient was put on treatment for pemphigus. By August 11, there were hypopyon ulcers of both corneas which perforated. The globes became soft and phthisical, the irises bound down. There was marked inflammation of the conjunctiva and sclera. Vision was absent. The treatment consisted of frequent irrigation of the eyes with boric acid solution, to keep them clear of discharge; atropin sulphate 1 per cent was used twice a day, and mercurochrome 1 per cent

every three hours. Liquid petrolatum was instilled after each irrigation.

By August 14, both general and ocular conditions were improved, and the patient could perceive light. By August 20, she was free from pain. August 24, she was able to open the eyes slightly. The chambers seemed to be formed, altho the lids were still swollen and the conjunctiva injected. What could be seen of the right cornea showed irregularities and roughness; the left was clearing fairly well. The mercurochrome was discontinued and zinc sulphate, $\frac{1}{4}$ grain to the ounce, and epinephrin 1:1000 substituted. On October 2, the patient was able to sit up and open her lids slightly. The conjunctiva was still injected, and the cornea of the right eye was hazy with facettes and scarred areas. In the left eye, the cornea was nearly normal, except for a central opacity from the old ulcer. A view of the fundus could not be obtained.

By November 4, the eyes had improved rapidly as had the general condition. The patient could open the eyes fairly well and hold them open. In the right eye there was scarring of the lower portion of the cornea with a bleb like formation at the site of perforation. The pupil was fairly well dilated, but would not dilate fully. The scarred area was vascularized. There were no signs of perforation of the cornea in the left eye, and the vision was good for large objects. Argyrol solution 20 per cent was instilled four times a day into both eyes to lessen the secretion.

November 23, the general condition was so improved that the patient was dismissed from the dermatologic service. The right upper lid was rather heavy and congested with a slight tendency to entropion. There was no entropion of the lower lid. The culdesac was foreshortened little, if any. The conjunctiva, however, was replaced by a milky-white film of new connective tissue that was somewhat contracted, and there were a few bands of adhesions running from the globe to the margins of the lid, only the region of the outer canthus being affected on the upper lid. A dense central opacity had

resulted from the ulcer. The anterior chamber was formed altho the site of the perforation in the lower half of the cornea could be made out. There was an anterior synechia 2 to 3 mm. above the lower limbus. The fundus could not be seen on account of the corneal opacity. The left upper lid was congested and heavy, but moved rather freely; entropion was not present, altho it was marked on the lower lid. There was a foreshortening of the lower culdesac and the lashes rubbed on the lower portion of the cornea. There were numerous dense adhesions between the globe and the lid in this region. (Fig. 1.) The lower half of the cornea was nebulous. The pupil was round and reacted well to light; anterior synechiae was not noted. Vision was reduced to ability to count fingers at three feet. Because of the marked entropion of the left lower lid, a plastic operation was advised to save the cornea from further injury. This was carried out later; good cosmetic and functional results were obtained.

CASE 2. Primary pemphigus of the skin with secondary ocular involvement.—A married woman, aged forty-four, came to the Mayo Clinic August 11, 1925, because of skin trouble, involving the eyelids, which had lasted about three and a half weeks. She had not been ill previously, altho she had been taking a considerable quantity of "Tanlac" prior to her present illness. July 19, 1925, she noted a small blister on one eyelid. Later the lids of both eyes became red and swollen and the bulbar conjunctiva was red, but there was no itching. She was treated by her local physician without benefit. The redness and swelling of the lids persisted and spread to the face. A few days later the swelling and redness had spread to the arms, back and chest and was accompanied by itching and oozing. During the week preceding her admission to the Clinic, she noted a blotchy redness of the lower extremities. Both eyes and the mouth had been sore since the onset of the illness.

The patient was slightly obese. The systolic blood pressure was 116 and the diastolic 80; the pulse was 120 and

the temperature 101.6°F. Test for serum reaction was negative. The leucocytes and erythrocytes were normal. The urine was normal except for an occasional pus cell. The general examination was otherwise negative.

On dermatologic examination, elevated round, dark red plaques, which were not tender, were observed over the flexor surfaces of the forearms, and

for slight crusting in both nasal vestibules and slight erosion, crusting and exfoliation of the right external auditory canal.

The eyelids were swollen and of board like consistency. The patient could open them with difficulty and then only partially, and was unable to close the lids of the right eye completely. The eyes appeared normal in



Fig. 1. (Case 1) Adhesions between lower lid and globe and opacities over cornea are shown. Marked entropion of left lower lid and thickening of both upper lids.

a bright erythematous appearance of the skin, with erosion, oozing and exfoliation, over the face and neck, upper part of the chest, both anteriorly and posteriorly, and the upper arms. Patchy erythema, disappearing on pressure, was present over the lower extremities. The most distressing feature was dermatitis venenata, probably caused by the local applications. The differential diagnosis rested between dermatitis venenata, allergic dermatitis, erythema multiforme, urticaria, dermatitis medicamentosa and pemphigus. By the middle of August, however, a definite diagnosis of pemphigus vulgaris was made. The ear, nose and throat were normal except

size, shape and position. The conjunctiva was injected and there was some mucous secretion. The cornea was clear. The ocular movements were normal but difficult on account of the condition of the lids. The pupils were equal and reacted to light and accommodation, and in convergence. Vision was normal. The fields were normal to rough test. It was impossible to make out the details of the fundi on account of the condition of the lids, altho the reflexes were good and the discs were normal. It was felt that the condition of the eye was probably secondary to the general illness. Frequent irrigation of the eyes with boric acid solution was prescribed, to

keep them free from secretion; zinc sulphate solution, $\frac{1}{4}$ grain to the ounce, with epinephrin 1:1000 was prescribed three times a day for the conjunctivitis, and liquid petrolatum instilled every two hours to keep the cornea intact and lubricate the eyes.

The condition of the eyes continued about the same until August 24 when there was marked improvement, both local and general. August 29, the eyes appeared normal, the cornea clear, the fundi negative and ocular movements good; the swelling of the lids had disappeared. Treatment of the eyes was discontinued at this time. August 15, areas apparently of broken bullae were noted on the skin; but by August 31, all evidence had disappeared, the skin resumed its normal appearance and the patient was up and about. She was dismissed on this date. In a letter September 7, she reported her condition as good.

Comment.—In this case of pemphigus vulgaris the symptoms were more or less typical; but, except for the condition of the lids, there was very little trouble in the eyes. The mild conjunctivitis may have been a sequel of the disease of the lids. No bullae were seen in the conjunctiva and no shrinking or adhesions were present at any time. The cornea retained its luster. No evidence of involvement of the mucous membrane was noted elsewhere except for sore mouth during the early course. This is in noticeable contrast to the preceding case.

CASE 3. Primary pemphigus of the eye.—A married woman, aged thirty-five, came to the Clinic January 20, 1925, because of photophobia and soreness of the left eye. At the onset she became very ill with ulcerated and crusted lesions of the mucous membrane of eyes, nose, mouth and throat. There were also a few lesions of the skin on the arms, head and chest. Measles was diagnosed by her local physician, inasmuch as measles was epidemic in the locality at that time. The patient stated that she thought there were some lesions in the vagina at that time. The purulent discharge from the eyes persisted for two weeks.

There was a considerable degree of

photophobia and the left lids were kept closed. Externally the lids were normal. There were a few herpetiform lesions in the right labial commissure and a few contracting striations in the ala nasi. A mass was palpated in the left lower eyelid in the region of the fornix about 1.3 cm. in diameter which, when the lids were everted, appeared to be a cyst. There were several smaller cysts of like nature in the fornix of the right eye. The palpebral conjunctiva of both upper lids showed irregular scars chiefly longitudinal, with raw, red areas of denuded epithelium. The conjunctival epithelium had a milky white appearance and there were stringy mucous secretions in the upper fornices. The upper culdesacs were foreshortened and constricted by vertical adhesions between the bulbar and palpebral conjunctivae; similar adhesions even more marked were present in the lower fornices. In the right eye the bulbar conjunctiva was clear; the pupil was regular and reacted to light and accommodation and in convergence. The fundus was entirely normal. In the left eye, the bulbar conjunctiva was mildly injected but blanched quickly with the use of epinephrin. The cornea was clear, no evidence of pannus was seen, the anterior chamber was of normal depth, the iris was normal and the pupil and reflexes normal. The fundus was normal, but showed some astigmatic distortion. The fields were normal, as was the tension to palpation in both eyes. There were some lesions on the extensor surfaces of the arms, some of which had left scars. Vision was O.D. 6/5 with correction and O.S. 6/60 with correction.

The diagnosis from the appearance of the eye was pemphigus. An alkaline solution was prescribed for the eyes. The general physical examination was negative. The Wassermann test, urinalysis and roentgenologic examination were negative; the blood count was normal. Biopsy of an axillary node was reported negative for tuberculosis, as were guinea-pig inoculations. The dermatologic diagnosis of the skin condition was lupus erythematosus disseminatus, with the note

that this condition has been reported in conjunction with pemphigoid lesions. Some periapically infected and some impacted teeth were removed.

The patient was dismissed February 24, and told to return for examination later. At this time it was definitely felt that the condition of the eyes was pemphigus, which, like the third stage of trachoma, keratomalacia and other

cularization of the cornea. November 5, the vision had not changed. The general condition of the lids and globe was the same.

There were adhesions in the fornix and below in the regions of both inner and outer canthi. There was a deeply discolored area in the lower fornices with a bleb like appearance and between 10 and 15 mm. in extent; in the

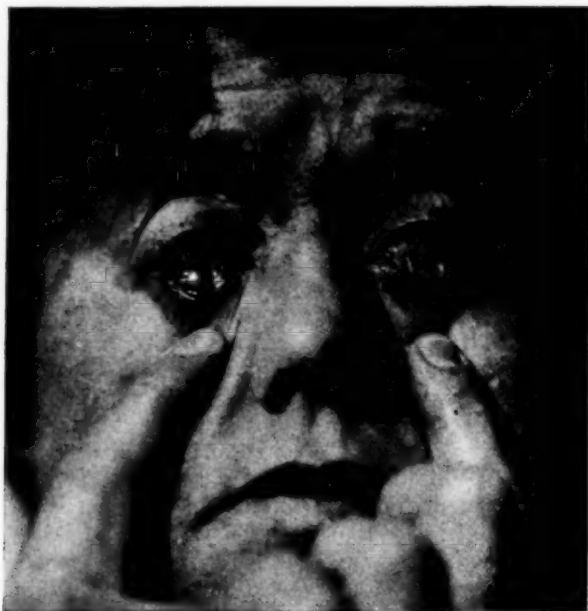


Fig. 2. (Case 3) Eyes are turned upward cornea being covered by upper lid. Dense adhesions between the globe and lower lid and discoloration in region of the fornix are shown; also a large bleb in lower fornix and smaller blebs which extend to the region of the canthi.

similar diseases of the eye, shows characteristic shrinking of the conjunctiva, diminished lacrimal secretion, and lowered resistance of the cornea and conjunctiva with tendency to injection and inflammation. It was further thought that the condition of the skin was due to lymphatic tuberculosis, similar to erythema nodosum and disseminated erythematous lupus, and that the condition of the eyes was not due to the disease of the skin nor connected with it.

The patient returned for observation October 20. Vision was O.D. 6/12 with correction, O.S. 6/30 with correction. The condition of the eyes had remained as before except that in the left eye there appeared to be more corneal scarring with irritation and some vas-

cularization of the cornea. November 5, the vision had not changed. The general condition of the lids and globe was the same. There were adhesions in the fornix and below in the regions of both inner and outer canthi. There was a deeply discolored area in the lower fornices with a bleb like appearance and between 10 and 15 mm. in extent; in the

left eye this involved practically the entire lower fornix. (Fig. 2.) The cornea of the right eye was clear, while in that of the left eye, there was a triangular opacity in the lower nasal quadrant of the cornea. This was vascularized. Former treatment was continued.

The patient returned again for observation April 21, 1926, the eyes appearing the same as at the last examination. The vision was O.D. 6/15 with correction, O.S. 6/60 with correction. She stated that the eyes had been quiet and comfortable and she returned primarily for dermatologic treatment. The treatment was continued as before.

She was seen again May 3; the vision was the same as at the last

visit. The right cornea was clear, the left showed small white areas of mutton-fat deposits in the substantia propria of the cornea which interfered with vision. There was a slight rash on the arms and the temperature was 99.6°F. The patient was advised to continue with the eye treatment. The eyes were examined by Dr. Gifford of Omaha, May 26. He agreed with the diagnosis of pemphigus of the eyes and advised continuing with the same treatment she was receiving.

Comment.—This case is of interest from the bizarre picture presented; true pemphigus primary in the eye with associated lupus erythematosus disseminatus of the skin. These cases of pemphigus, in contrast to the other type associated with generalized pemphigus, do not usually offer as good a prognosis. There is slow but certain destruction, with ultimate loss of vision, whereas in the generalized type associated with skin manifestations, when the general disease is

checked the eyes show improvement or remain stationary at least for a long time.

SUMMARY.

General pemphigus is not common and ocular pemphigus is rare.

There are three general types of ocular pemphigus as here illustrated by case histories: (1) generalized pemphigus with severe ocular manifestations (Case 1); (2) primary pemphigus of the skin with secondary involvement of the eyes (Case 2), and (3) primary pemphigus of the eye (Case 3).

In the last type the prognosis as to ultimate usefulness of the eye is least hopeful.

The following data are essential in whole or in part to a diagnosis of ocular pemphigus: (1) xerosis; (2) bullae, or ruptured blebs; (3) essential shrinking of the conjunctiva; (4) dull atrophic cornea and (5) late conjunctival synechiae and adhesions.

Quain and Ramstad Clinic.

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ENTROPIUM UVEAE.

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This was present in twenty-four cases studied with the microscope. Nine of these were spastic, developing after adhesions of the iris to the lens capsule, the pupils still appearing to react. In the second group, nine cases, a membrane had extended from the anterior surface of the iris to the lens capsule. Such pupils do not react. The third group, one case, followed cataract extraction with much hemorrhage. In group four were five cases, following annular posterior synechiae. The companion paper on Ectropium Uveae is published, page 586.

Entropium uveae, which is a turning in or inversion of the pupillary border of the iris, has a clinical interest; for in this condition the pupil can react to light and accommodation, in spite of posterior synechiae being present, and the presence of these posterior synechiae may be entirely hidden from view and only seen after dilation of the pupil. Also, the entropionization of the pupillary border may give an appearance to the iris simulating an iris bombé.

The condition of ectropium uveae has attracted many investigators, as its clinical appearance is so striking, and the eyes present themselves so frequently for microscopic examination because they are usually blind and glaucomatous. Entropium uveae, on the contrary, has not received as much attention, as evidenced by the fact that only two references to the condition can be found in the literature.* Its clinical appearance is by no means conspicuous, and the condition usually occurs in eyes which still possess some vision and therefore are not examined frequently microscopically.

*"One more reference in the literature has appeared since the completion of the paper."

The writer has accumulated for microscopic study 24 cases of entropium uveae, on which this report is based. In regard to their pathology, these cases fall into 4 groups as follows:

1. In the first group, which I have called spastic entropium uveae, there were nine cases. It develops when, during an iritis, only a small area of the posterior surface of the iris, around the pupillary margin, becomes adherent to the anterior lens capsule. Then the contraction of the pupil causes an inversion of the anterior limiting layer of the iris and pupillary border of the sphincter muscle. (Fig. 1.) This type of entropion occurs especially in those cases of iritis which were treated with a mydriatic at the onset of the disease; because when the pupil is dilated a smaller area of the posterior iris surface rests against the anterior lens capsule, thus allowing the formation of synechiae immediately around the pupillary margin. Also, when the posterior synechiae form with the iris in the dilated or semidilated position, the later return of the pupil to its normal state (after the iritis has subsided and the mydriatic has been discontinued), allows a greater range for the sphincter

contraction and therefore a more pronounced entropion. As a rule, in cases of iritis the posterior synechiae are formed, not only in the vicinity of the pupillary border, but over an area on the posterior surface of the iris, cor-

cataract extraction, when posterior synechiae form between the pupillary border of the iris and the empty lens capsule (Fig. 2). The pupil is dilated in the postoperative treatment of cataract extraction, and therefore these

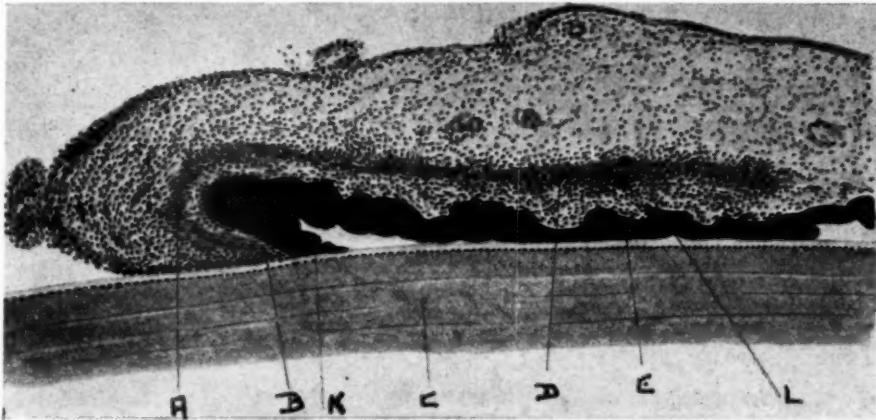


Fig. 1. Section of pupillary region of iris and part of lens. A, Entropionized sphincter muscle. B, Entropionized pupillary border of iris, with posterior synechiae. C, Lens. D, Sphincter muscle. E, Capsule of lens. K, Entropionized pigment epithelium. L, Clump cell.

responding to about one-half the width of the sphincter muscle, which prevents the formation of an entropion uveae. As posterior synechiae confined to the pupillary border are the exceptions rather than the rule, the rather infrequent occurrence of this spastic entropion is not surprising.

This same type of entropion also develops sometimes in cases following

posterior synechiae are more prone to be confined to the pupillary area of the iris; and because of the absence of the lens these synechiae lie behind the plane of the iris and sphincter muscle, and the contraction of the latter is therefore facilitated in the production of the entropion. This is true just as spastic entropion of the lids occurs in cases in which the plane of the lids has

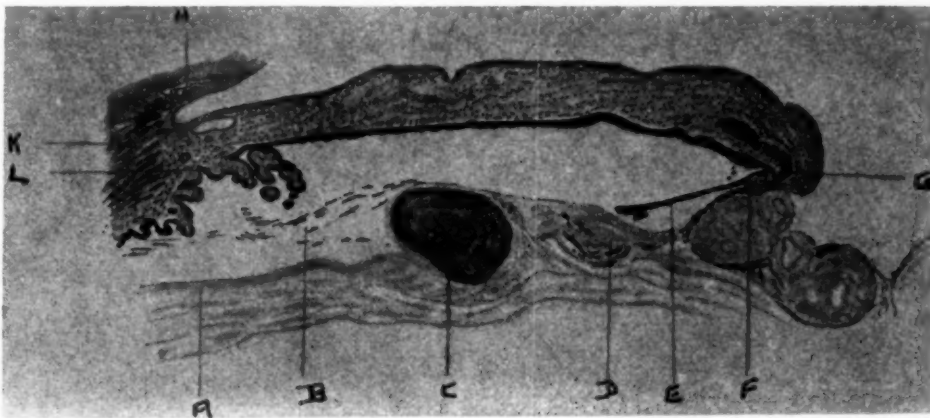


Fig. 2. Section thru iris, filtration angle, ciliary body, lens capsule and anterior vitreous. A, Anterior limiting layer of vitreous. B, Zonule of Zinn. C, Soemmering ring. D, Proliferated lens epithelium. E, Entropionized and proliferated pigment epithelium. F, Entropionized pupillary border of iris, with posterior synechiae. G, Entropionized sphincter muscle. H, Schlemm's canal and pectinate ligament. K, Ciliary body. L, Ciliary processes.

receded as seen in enophthalmos. Factors in the production of these posterior synechiae following cataract extraction are (1) trauma to the pupillary border in expressing the lens; (2) irritation from soft lens matter; (3)

pupillary border of the iris with it, because of the posterior synechiae present (Fig. 2, D.).

The development of spastic entropion is dependent on the presence of posterior synechiae only in the im-

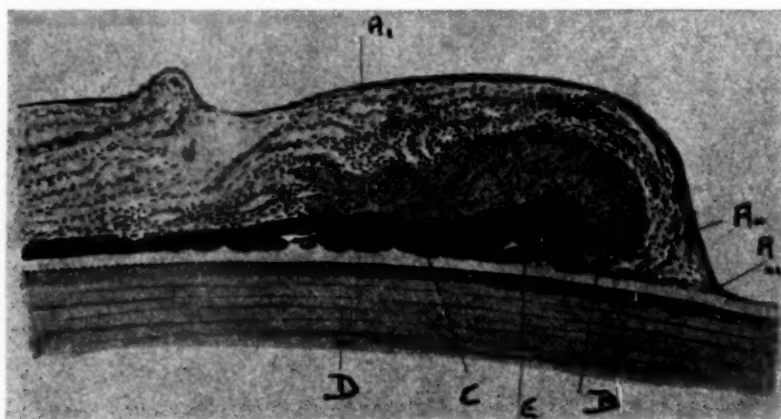


Fig. 3. Section thru pupillary region of iris and lens. A, Membrane extends from anterior surface of iris A', around the entropionized pupillary border A, onto anterior capsule of lens A". B, Entropionized sphincter muscle. C, Sphincter muscle. D, Lens. E, Entropionized pigment epithelium.

iritis. Another factor which enters into the production of this entropion following cataract extractions is the contracture of Soemmering's ring. This is brought about by the proliferation of the lens epithelium into a fibrous tissue, which contracts towards the ciliary body and in so doing draws the

diate vicinity of the pupil. If the synechiae are very extensive (i. e., extend for any great distance along the posterior surface of the iris, or approach being total posterior synechiae) no such spastic entropion can develop.

Clinically, one sees an inversion of the pupillary border, which is recog-

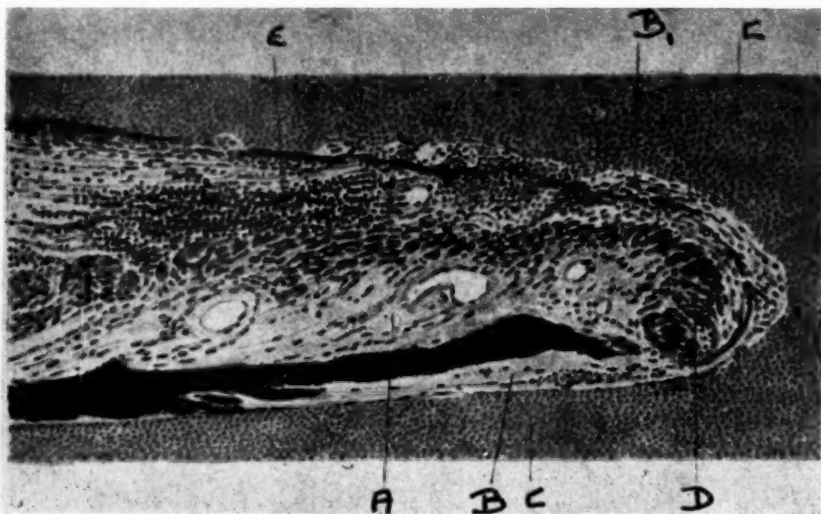


Fig. 4. Section thru pupillary border of iris, which is surrounded by blood. A, pigment epithelium. B, Membrane along posterior surface of iris, extending around the pupillary border onto anterior surface of iris at B'. C, Red blood corpuscles. D, Entropionized sphincter muscle. E, Lymphocytes in stroma of iris. (Posttraumatic chronic infiltrating iritis).

nized by its loss of the pigment seam and its inward curving contour. This inversion makes the anterior lens surface appear further behind the plane of the iris, or deeper behind the iris than normally. This also gives a crater like effect to the pupillary area and occasionally this crater like effect is so pronounced that the iris has the same bulging appearance as seen in iris bombé. In iris bombé, however, the periphery of the anterior chamber

iris disappears and the true pupillary border can now be seen with its posterior synechiae and any pigment seam that might be left.

2. In the second group of cases, which is caused by the contracture of a membrane extending from the anterior surface of the iris to the anterior surface of the lens capsule, there were nine cases. This type of entropion occurs as the result of an inflammation of the iris, following which a membrane

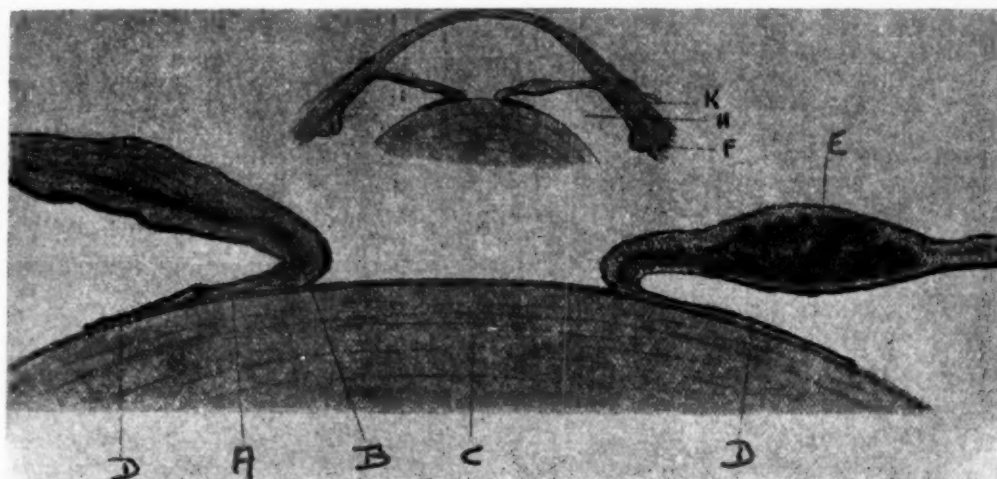


Fig. 5. Section thru pupil, iris, and part of lens. A, Entropionized pupillary border of iris with posterior synechiae. B, Lens. C, Entropionized pigment epithelium. D, Nodule of lymphocytes in iris stroma, as this was a case of syphilitic iridocyclitis. The insert is a diagrammatic sketch of the anterior sector of this eye, showing the bombé iris. E, Ciliary body. H, Enormously dilated posterior chamber. K, Iris bulged so far forward that it is pressed against the posterior surface of the cornea.

is abolished for the iris bulges more in the outer half than it does in the inner half (Fig. 4), whereas in spastic entropion the bulging is in the pupillary area (Fig. 2). Also, in iris bombé, the tension is high, except when the eye has become atrophic.

In spastic entropion posterior synechiae are present but are hidden from view because the true pupillary border is turned inwards, and is behind the false pupillary border formed by the inward curving anterior limiting layer of the iris. Altho posterior synechiae are present, the pupil reacts to light and accommodation because the sphincter and dilator muscles are not prevented from functioning by the synechiae which are confined to the pupillary area of the iris. After a mydriatic the pupil dilates, because the inversion of the pupillary area of the

is formed on the anterior surface of the iris in the pupillary zone (i. e. from the lesser circle to the pupillary border) and extends onto the anterior lens capsule (Fig. 3). The contracture of this membrane pulls the anterior limiting layer and stroma of the iris inward toward the pupillary area, thereby forming a false pupillary border and sphincter muscle. The contraction of the sphincter muscle as described under Group 1 also plays a part in the development of this type of entropion. If posterior synechiae are present between the anterior lens capsule and the posterior surface of the iris, they will prevent the formation of this entropion, for then the pupillary area of the iris cannot be inverted by the contraction of the membrane.

Four of the nine cases in this group or 45% were that of syphilitic irido-

cyclitis. A syphilitic reaction in the iris is characterized by its localization in the area of the iris stroma from the lesser circle to the pupillary border so it is not surprising to find so many cases of syphilitic iridocyclitis among these cases with membranes over this same specified area. Two cases were studied in which there was an ectropion in one sector and an entropion in another sector of the same iris. This was brought about by the contracture of a membrane on the anterior surface of the iris, which in the one sector ex-

into a membrane, the contracture of which had inverted the pupillary border of the iris and produced an entropion, in the same way that a membrane on the anterior surface of the iris everts the pupillary border and produces an ectropion, (Fig. 4). The fact that the lens had been removed prevented the possibility of there being any posterior synechiae present, which would have prevented the formation of this entropion. This type of entropion uveae, caused by the contracture of a membrane on the posterior surface of

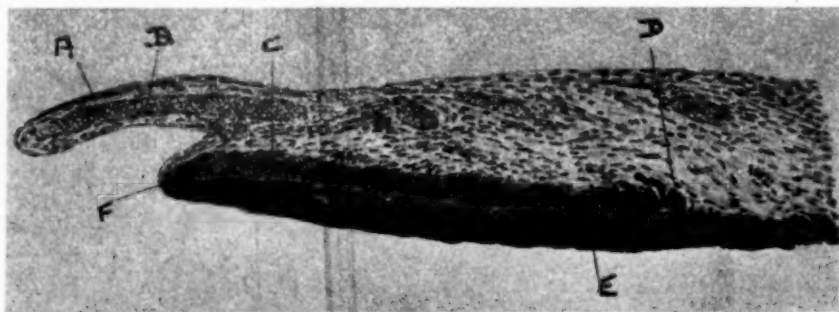


Fig. 6. Section thru pupillary area of iris of a microphthalmic eye. A, Rudimentary pupillary membrane extending towards the pupil, hiding true pupillary border of iris, F. B, Blood vessel. C, Sphincter muscle. D, Medial termination of dilator muscle. E, Pigment epithelium.

tended to the anterior capsule of the lens and produced an entropion as described above, and in the other sector, where no posterior synechiae were present and the membrane did not extend onto the anterior capsule of the lens, an ectropion was produced as described in the paper entitled "Ectropium Uveae" which appeared in the August issue of this journal.

Clinically, the entropion belonging to this group of cases is not so striking. The pupil does not react to light and accommodation, there is no particular crater appearance of the pupil, and there is always at least a beginning pupillary membrane around the pupillary circumference.

3. In the third group, which is produced by the contracture of a membrane on the posterior surface of the iris, there was one case. This was a cataract extraction, following which there was a great deal of hemorrhage in the anterior and posterior chamber. Along the posterior surface of the iris this hemorrhage had been organized

the iris, is comparable to the cicatricial entropion of the lids following contracture of scars, and symblepharon in the conjunctival sac, as seen in trachoma and following lime burns, etc.

Redslob has reported a case of entropion uveae resulting from the contracture of a membrane on the posterior surface of the iris. His case was one of glaucoma on which a trephine had been done. Following the operation there was a slight infection which led to atrophy of the globe. Microscopic examination showed the presence of an entropion uveae caused by the contracture of a membrane on the posterior surface of the iris, extending from the pupillary border to the region of the corona ciliaris and root of the iris. An important question not answered by Redslob is, why no posterior synechiae were formed at the time this membrane was formed, which is the usual case in infections of the posterior chamber in which membranes are formed there. Because posterior synechiae accompany the forma-

tion of membranes in the posterior chamber is the reason why we do not see entropion more often under such conditions.

4. In the fourth group of cases, which occur under certain conditions in iris bombé, there were five cases. When the annular posterior synechiae causing iris bombé are confined to the immediate vicinity of the pupillary border of the iris, then the bulging forward of the iris by the increased intraocular tension causes the pupillary area of the iris to take an inward curving contour and thereby forms a false pupillary border which hides the fixed, inverted, true pupillary border (Fig. 5). The contraction of the sphincter as described in Group 1, or the contraction of a membrane from the anterior surface of the iris to the anterior lens capsule, as described in Group 2, can also aid in the formation of this entropion. Sometimes in iris bombé the high intraocular tension bulges the iris forward with such force that the synechiae between the anterior lens capsule and the posterior surface of the iris are torn loose except at the pupillary border and then an entropion develops. When the synechiae between the anterior lens capsule and the posterior surface of the iris are torn loose the pigment epithelium is filled in again by the growth of pigment epi-

thelium, thus producing the condition so well depicted in Fig. 5 D.

The congenital condition of the iris, seen especially in microphthalmic eyes, whereby a thick, rudimentary pupillary membrane extends from the lesser circle of the iris towards the pupillary area, further than the true pupillary border, may give the appearance of an entropium uveae (Fig. 6). This condition cannot be classified properly as a true entropium uveae but only simulates one.

Enslin has reported a case of congenital entropium uveae. It developed as the result of an intrauterine infection of the iris which was sharply localized in one area at the posterior border. The puckered contracted scar resulting from this small, sharply localized infection, at the posterior border of the iris stroma, caused a shortening of the posterior borders of the iris and thereby pulled the pupillary border inwards causing an entropion.

CONCLUSIONS: Entropium uveae may be of three types.

1. Spastic.
2. Contracture of a membrane.
 - a. From the anterior surface of the iris to the lens capsule.
 - b. Along the posterior surface of the iris.
3. Iris bombé.

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Acknowledgement is accorded Professor A. Fuchs for his kindly interest and suggestions.

OCULAR PATHOLOGY OF THE NEWBORN.

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A study of four hundred newborn infants and the circumstances of their birth furnishes the basis of this paper. Three tables giving: 1. General data, 2. Retinal hemorrhages, 3. Extraocular head lesions, summarize the important facts observed. From The Robinson Memorial Hospital of Boston University.

A survey of four hundred infants was made during 1924-25 in the Robinson Memorial Hospital, maternity department of Boston University, taking one hundred from each service, which was about one-fourth of the births for the year. This selection gives a good cross section of cases and professional care.

It was undertaken to seek an explanation for certain visual and muscle faults usually classified as congenital; to observe and record intraocular and certain extraocular conditions of interest to obstetricians; to compare data in this institution with that in the literature; and for the personal value of those making the study.

An attempt was made to examine each infant within the first twenty-four hours after birth, using atropin sulphat 1/10 per cent, which gave satisfactory mydriasis in thirty minutes. The anterior ocular structures were studied with a plus 16 or 20 sphere in the ophthalmoscope, which detected many pupillary threads and membranes, then as careful fundic study as possible was carried out. Any extraocular lesion having a direct or possible remote bearing was noted also. Parenthetically, it may be stated that these examinations were made as the first duty of the morning when the observers were fresh and had plentiful patience, and the infants, likewise, quiet from morning care.

The literature dates back to 1861 when Jaeger made observations. Since then several observers have reported intraocular hemorrhages occurring, roughly, in 35 to 3 per cent frequency, within the first twenty-four hours after birth. Pelvic anomalies and prolonged or complicated labors are given chief consideration in causing these lesions,

while asphyxiation may have much to do with it also. Sanford,¹ writing in 1926, showed the relation of various anesthetics used in labor to bleeding in the infant. He concludes that nitrous oxid prolongs bleeding and coagulating time one and two minutes respectively, and that ethylen prolongs these another minute. Ehrenfest² has contributed much to the subject of birth injuries and feels that too much emphasis has been given to hemorrhagic diatheses and that the more important factors of artificial and physiologic trauma incident to birth are overlooked. Severe intracranial pressure incident to the head's passage thru the birth canal affects the eye both thru hypertension in the supravaginal space about the optic nerve within the orbit, as in choked disc, and thru impeded venous return of the retinal circulation which drains into the cavernous sinus. Central, or macular, hemorrhages are likely to leave permanent visual faults.

The last reported survey was made by Jacobs³ in 1924, based on a study of 190 infants in Barnes Hospital, St. Louis. He discussed quite fully the findings and various opinions concerning the etiologic factors offered by observers up to that time. In his group of 190 cases he found 19 showing retinal hemorrhages within 24 hours and an additional 4 after 24 hours, a total of 23 cases, or 12.1 per cent. My 400 cases showed 11 infants with retinal hemorrhages, a percentage of 2.75%; 194 infants with hazy discs, or 48.5%; 23 infants with pupillary membranes, or 5.75%; and 31 with extraocular head lesions, or 7.75%.

COMMENT. It is of some interest to study the general data concerning the mothers. The largest number of births were from the first pregnancy, a con-

TABLE 1.—GENERAL DATA. 400 BIRTHS.

TABLE 1.—GENERAL DATA—400 BIRTHS.																
Mother's—		Minimum			Maximum		Under 20		20-29		30-39		40-Up			
Age		15			44		39		255		102		4			
		1	2	3	4	5	6	7	8	9	10	11	12			
Parity		152	117	51	31	17	11	5	9	5	1	0	1			
		Minimum		Maximum		Under 10		10-14		15-19		20-29		30-Up		
Hours Labor....	½	61		170		122		65		37		8				
		Generally			Slightly			Small			Large					
		Contracted			Contracted			Flat			Flat			Funnel		
Pelves		204	13	108	29	19	17	9	2							
		White		Colored		Wassermann (blood)			Negative		Positive		Questionable			
Race		377	23				394		3		3					
Infant—								Cephalic		Breech		Foot		Shoulder		
Presentation								386		11		2		1		
LOA LOP ROA ROP LSA RSA RSP LOT ROT R BROW T Shoulder																
Position	207	20	122	14	2	4	6	1	1	1	1					
		Low	Mid	High												
		Normal	Forceps	Forceps	Forceps	Breech	Podalic	Caesarean	Spontaneous							
Delivery	326	25	8	16	15	4	5	1								
		Primary		Secondary		Term		Premature		Male		Female		Twins		
Respiration	383	17	Maturity	379	21	Sex	215	185	2 prs							
Observation under 25 hours.....															245	

Special Findings

Extraocular Head Lesions, 31 cases. Retinal Hemorrhages, 11 cases. Pupillary Membranes, 23 cases. Hazy Discs, 194 cases.

siderable drop in the second, and a marked drop beginning with the third. The majority of labors were terminated under 10 hours. Of pathologic pelves, the generally contracted occurred in the greatest frequency, nearly half of the 400 being abnormal in some way.

Concerning the general data pertaining to the babies, the percentage of LOA and ROA positions are of interest when considered with text book teaching. Deliveries were more than 75% normal, and of the Caesarean births, no retinal hemorrhages or head injuries, of course, were noted. The near balance of sex frequency is noted, with a greater number of males, perhaps a postbellum phenomenon. With a plus 16 or 20 in the ophthalmoscope pupillary threads or membranes were detected in 23 cases. Of much greater significance is the frequency of hazy discs, which seems logical to expect as a result of increased intracranial pres-

sure caused during the passage of the head thru the birth canal, and analogous to low grade papilledema. The head injuries and retinal hemorrhages are separately analyzed in detail.

Six were in labor 12 or more hours. Two were primiparas (one under 20 years). Four had pathologic pelves. Three required forceps delivery. Only two were posterior positions. Nine babies weighed more than 7 pounds. The two canal forceps applications produced facial nerve involvement. No one condition seems to stand out particularly as responsible, but rather a combination of circumstances, differing in their relation, may be stated to be operative in retinal hemorrhage production. Case No. 200 certainly was normal enough in all particulars to have a freedom from retinal involvement, and No. 204 almost as much so, being in labor only 12 hours and the baby weighing less than 8 pounds.

TABLE 2.—RETINAL HEMORRHAGES

Mother					Infant							Fundus
Case No.	Age	Parity	Hours Labor	Pelvis	Position	Delivery	Sex	Weight Lb. Oz.	Maturity	Hours Age	Discs	
53	38	5	39	generally contracted	LOP	normal	m	7 14.5	term	30	clear	Small hem. rt. temporal retina
68	19	1	12	funnel	LOA	mid forceps	m	7 11	term	5	hazy O.U.	Multiple hems. rt. and lt. lt. facial paralysis, etc.
69	35	2	15	normal	LOA	normal	m	9 4.5	term	35	clear	Superficial hem. rt. below disc. Subconj. hem. rt.
200	30	3	5.5	normal	ROA	normal	m	6 12	term	3	hazy O.U.	Multiple radial hems. about discs. rt. and lt.
204	28	2	12	normal	LOA	normal	f	7 8	term	26	hazy O.U.	Multiple radial hems. about rt. disc
205	33	4	14	normal	ROA	low forceps	m	8 14	term	13	hazy O.U.	Multiple radial hems. thruout rt.
261	37	10	6.5	normal	LOA	normal	m	10 2	term	32	hazy O.U.	Multiple fine hems. near rt. disc
263	25	2	5.5	normal	ROA	induced	f	7 2	pre.	105	hazy O.U.	One deep hem. temporal border rt. disc.
288	18	2	10	generally contracted	ROA	normal	f	5 3	term	49	hazy O.S.	One large superficial hem. lt.
317	28	3	2.5	generally contracted	ROA	normal	m	9	term	20	hazy O.S.	Multiple small superficial hems. near rt. disc.
*336	35	1	20	normal	ROP	high forceps	m	7 10	term	24	hazy O.U.	Multiple hems. and dilated veins rt. and lt. rt. facial paresis.

*Observation 13 days later found fundi clear.

TABLE 3.—EXTRAOCULAR HEAD LESIONS

Mother					Infant							Extraocular Lesions
Case No.	Age	Parity	Hours Labor	Pelvis	Position	Delivery	Sex	Weight Lb. Oz.	Maturity	Hours Age		
4	31	2	14	generally contracted	LOA	breech version	f	9 2	8 mos.	81		Contusion both cheeks, fundi clear. (placenta previa).
7	24	4	20	generally contracted	ROA	normal	f	4 5	pre-mature	50		Subconjunctival hem. lt. hazy discs.
19	32	1	16	flat	L brow A	high forceps	m	5 5	term	50		Contusion both cheeks, distorted skull, fractured nose and lt. mandible (jutting promontory).
61	33	5	15.5	large flat	LOP	induced version	m	8 14	term	103		Fractured clavicle rt. hazy discs. rt. turns up and out (toxemia pregnancy).
62	27	1	11.25	slightly contracted	LOA	normal	m	6 7	term	71		(Hemorrhagic disease of newborn) convulsions, eyes oscillate together and rt. alone. Died at 3.5 days.

TABLE 3.—EXTRAOCULAR HEAD LESIONS—Continued

67	21	1	8.5	normal	LOA	low forceps	t	6 8.5	term	4	Forceps marks over cheeks and fronto- parietal areas. Fundi clear.
*68	19	1	12	funnel	LOA	mid forceps	m	7 11¼	term	5	Lt. facial paralysis, hematoma lt. mastoid, wound rt. frontal (both retinae full of hemor- rhages).
*69	35	2	15	normal	LOA	normal	m	9 4.5	term	35	Subconjunctival hemor- rhage rt. (one retinal hem. rt.).
76	26	1	23	generally contracted	LOA	mid forceps	m	7 2	term	46	Left facial paralysis, lower branch, retinae clear.
85	17	1	10	generally contracted	LOA	low forceps	f	6 6	term	17	Forceps marks both cheeks, retinae clear.
170	19	1	30	slightly contracted	LOP	low forceps	m	?	term	27	Contusions both cheeks, hematoma right pa- rietal.
181	26	1	12	generally contracted	LOA	normal	m	8 2	term	18	Molded head, discs hazy.
186	27	4	11	normal	LOA	normal	m	8 10	term	186	Rt. cornea hazy (silver nit.?) discs hazy.
199	31	4	7	normal	ROA	low forceps	m	6 14	term	22	Right facial paresis, retinae clear.
201	22	2	18	normal	LOA	low forceps	f	6 14	term	34	Contusion rt. cheek, hematoma on vertex, discs hazy.
216	37	1	15	large flat	LOA	mid forceps	m	7 8¼	term	22	Left facial paralysis, contusions rt. frontal, retinae hazy.
222	32	1	22	normal	ROA	high forceps	m	7 8	term	18	Edema rt. lids, discs hazy; left facial paraly- sis, lower branch.
232	25	2	9	large flat	ROP	high forceps	m	7 13	term	9	Contusions lt. ear and cheek, discs hazy (con- genital dislocation hip) +
252	22	1	13	normal	ROA	normal	m	5 12	term	15	Molded head rt. pari- etooccipital, discs hazy.
254	21	1	15	generally contracted	LOP	high forceps	m	7	term	32	Left retina clear; left facial paralysis, rt. lids closed.
269	27	1	12	generally contracted	LOA	low forceps	m	7 2.5	term	½	Contusions both cheeks, hazy discs (mitral lesion)+
276	22	1	24	generally contracted	ROA	normal	f	7 15	term	15	Marked molding of head, discs hazy.
283	25	1	31	normal	ROA	high forceps	m	6 10	term	46	Forceps marks, opis- thotonos, twitchings of extremities, hazy discs.
311	20	1	6	normal	ROA	mid forceps	f	6 11¼	term	20	Left facial paralysis, contusion rt. frontal, discs hazy.
*336	35	1	20	normal	ROP	high forceps	m	7 10	term	24	Right facial paresis, forceps marks, retinal hemorrhages rt. and lt.
338	21	1	21	slightly contracted	LOP	high forceps	f	6 14	term	24	Forceps marks on face, discs hazy.
349	29	1	48	normal	ROA	mid forceps	m	8 3	term	48	Contusions both cheeks, retinae clear.
357	31	2	18.5	generally contracted	ROA	high forceps	m	6 12	term	24	Contusions rt. cheek and lids; discs hazy.

TABLE 3.—EXTRAOCULAR HEAD LESIONS—Continued

360	28	2	6	normal	ROP	low forceps	m	8 12	term	24	Contusions right frontal; discs hazy.
387	28	1	10	flat	LOA	low forceps	f	7 6	term	24	Contusion both cheeks and rt. lids, retinae clear.
388	20	1	10	normal	LOA	mid forceps	f	5 8¼	term	48	Multiple forceps marks, discs hazy.

*Included also under Retinal Hemorrhage cases. +Refers to mother.

COMMENT. Normal deliveries produced lesions only of general pressure such as hemorrhages and molding of the head, while forceps delivery was employed in all cases exhibiting contusions, facial nerve involvement, and hematoma. Three of the left facial paralyses were LOA positions and mid forceps deliveries; two were ROA, one with high, the other with mid forceps; and one was LOP with high forceps. Curiously, the two right facial involvements were only pareses, one ROA with low forceps, the other ROP with high forceps. Referring to Table 1, under *delivery*, it will be noted that about one-third of low forceps procedures caused lesions, while nearly all of mid forceps, exactly one-half of high forceps application were accompanied with similar results. It seems apparent, then, that whatever conditions exist necessitating the use of forceps, trauma may be expected. The ultimate effect of these lesions are of great interest. Gifford⁴ in his analysis of Congenital Abduction Deficiency considers L positions as having relation to the greater frequency of left C.A.D. muscle faults, and it seems logical that it might be so. Pressure of a forceps blade over the mastoid process, causing a facial nerve involvement, might also affect the abducens similar

to the Gradenigo Syndrome, resulting in interfered nerve function and secondarily a muscle maldevelopment in the external rectus.

Just what these retinal hemorrhages and various head lesions may prove to eventuate in is a matter for further study. A follow-up clinic has been instituted and will be continued until such time as reliable records of vision and extraocular function may be obtained. Thus far, three of the left facial paralyses cases seen show full facial recovery and no extraocular palsies were noted. Mothers stated that the face was normal by the time the baby was taken home at the end of the usual two weeks hospitalization.

Recognition in this study is due Bernard Lederman, M.D., Resident Obstetrician, who was interested in, and assisted with, these observations and who recorded the data, and to Miss Esther M. Babcock, R.N., whose untiring effort in personally caring for the mydriasis and handling the infants during the tedious examinations made the survey a success. My thanks are given to the Staff of Robinson Memorial for the privilege of making this study and their excellent cooperation in the same.

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BACTERIOLOGY OF THE NORMAL CONJUNCTIVAL SAC.

H. LUCIC, M.D.

CHEYENNE, WYOMING.

Statistics of bacteria in the conjunctiva vary with the locality from which cases are drawn, and the methods used by the observer. The following are based on observations from the Department of Ophthalmology, University of Nebraska, College of Medicine. Blood agar plates were found to possess advantages which they shared with large tubes of chocolate Loeffler's medium.

So far as I have been able to determine, Dr. H. Gifford is the only one to have published any results on this phase of bacteriology in Nebraska or its immediate vicinity. In 1893, this investigator¹ introduced the scraping method, using a small spade made by flattening out a piece of platinum wire. The superiority of this method over that of obtaining material with a loop has recently been emphasized by Lindner, Howard and others.

It is a well recognized fact today that intraocular surgery is a more risky procedure to undertake when pathogenic organisms are present in the sac, than when the sac is comparatively free from those normally present, but frequently virulent inhabitants. All ophthalmologists agree upon the fact that pathogenic bacteria do occur in the normal sac, but the percentage reported varies with almost every author. Probably this difference in results is chiefly due to three factors: the locality where the investigation happens to be carried out, the method used in taking cultures, and the type of culture medium used.

Wissmann,² in 1924 reported finding streptococci in 34.4% of cases examined by the silk thread method of Korr. Elschmig,³ discussing the superiority of the culture over the smear method, states that he found the pneumostreptococcus group occurring in 18.2% of cases examined. Kuffler and Schneider,⁴ comparing the smear with Elschmig's and the scraping methods, made the following tabular report:

Bacteria	Smear Method	Elschnig's Method	Scrapings
Xerosis	22.1%	10.4%	22.1%
Xerosis and			
Staph.	15.6%	15.6%	.....
Pneumococcus .....	.....	.....	3.9%

Pneumo. and			
Staph. ....	.....	14.3%	.....
Pneumo. and			
Streptococcus	3.9%	18.2%	.....
Staphylococcus	.....	26.0%	14.3%
Diplo. occi	11.7%	.....	.....
Diplobacilli ...	2.6%	2.6%	2.6%
Sterile	41.6%	10.4%	54.6%

Kraupa,⁵ reported streptococci occurring in 23% of cases, while McKee,⁶ reporting from Canada, found no pneumococci and 16% streptococci present in the normal conjunctival sac. Some even claim that pneumococci occur in as many as 80% (Gasparini), but this figure is probably too high.

This variation in results and the fact that pathogenic organisms do occur in the normal sac has lead us to believe it worth while to examine all cataract patients prior to operation. A total of one hundred cases were examined, sixty of which were cataract patients and the rest consisted of volunteers from among the medical students, and a few patients in the medical department of the University Hospital. All cases included in this report had normal conjunctivas; cases with even slight congestion were excluded.

A uniform examination was carried out, by anesthetizing the eye with a two per cent butyn solution. Scrapings with a platinum spatula, or a rather dull knife, were uniformly taken from the lower fold, precautions being taken not to touch the lid margins. Material thus obtained was immediately transferred to blood agar plates, smeared well over one-half of the plate with a wire loop and immediately placed in the incubator. After making the inoculation, if there was any material left on the spatula it was used for a smear examination, otherwise smears were made from a new scraping. The

smear examination was soon discontinued because we found that pathogenic organisms which grew readily on blood agar plates, and other media soon to be mentioned, were not demonstrable in the smears. We also were convinced that xerosis bacilli, which are present in about fifty per cent of the cases, were not easy to demonstrate in the smears. Using the above method of culturing the following results were obtained:

Staphylococcus albus	60	times
Staphylococcus aureus	7	"
Xerosis	51	"
Pneumococcus	7	"
Type 1, once		
Type 3, twice		
Type 4, four times		
Influenza bacillus	3	"
Subtilis bacillus	2	"
Large gram positive bacilli....	2	"
Streptococcus hemolyticus ..	1	"
Sterile	0	"

Pneumococci were differentiated from streptococci by the bile solubility method. The reason for using blood agar plates in preference to other media is because most of the organisms thrive best on this medium, colonies can be easily counted, and the isolation of colonies becomes a comparatively simple matter. About forty of the cases were cultured simultaneously on chocolate Loeffler's and Besredka's media, and some twenty cases in horse serum, by the Elschnig method.⁸ Results obtained on large tubes (8x1") of chocolate Loeffler's medium were approximately the same as those obtained on blood agar plates. Small tubes (1 c. c. of medium) of horse serum, or Besredka's medium, have a decided advantage over blood agar plates when expedition is desirable, as the streptopneumococcus group multiplies rapidly in small tubes and they can be demonstrated in these media in from eight to ten hours. This method is often a time and money saving procedure, especially for the patient. Besredka's medium has the advantage over horse serum in that it is so extremely cheap and can be readily obtained in any laboratory. It has been our experience that the streptococcus group will just

as readily grow in this medium as in horse serum, if not a little better.

Various careful investigators, using diverse methods of culturing, report negative results in their series of cases. Kraupa⁵ after examining six hundred and thirty-five eyes by Elschnig's method found 33% to be sterile. Pa' examined one thousand and four normal cases, more than one-half of which he found to be negative. McKee⁶ by using a unique method of rubbing the lids against the eyeball to stimulate lacrimal secretion and culturing it, found 28.5% to be sterile. On the other hand one has only to scan the literature to find reports of bacteria occurring normally in the conjunctival sac in 100%. Pillat⁸ examined thirty-two normal cases and found every conjunctiva to harbor organisms. His results are as follows:

Xerosis	100.00%
Staphylococcus	93.75%
Pneumococcus	40.60%
Morax	21.90%

It will be noticed that we were not able to find either Morax or Koch-Weeks bacillus in this particular series of cases. In another series of thirty cases where Besredka's medium was used by the Elschnig method, we were able to demonstrate Morax bacillus twice, staphylococci twenty-two times, B. xerosis twice and staphylococci mixed with xerosis twice. Evidently the Koch-Weeks bacillus is very rare in this part of the country, or the technic used has not been exact enough to meet all the requirements this organism demands. Numerous bacteriologic examinations of the conjunctival sac carried on in Omaha by Drs. H. Gifford and S. R. Gifford have never shown Koch-Weeks bacilli.

Thanks are due to Dr. S. R. Gifford for encouragement in this work, and for help in examining unusual cultures and smears.

CONCLUSIONS.

1. The percentage of types of bacteria occurring in the normal human conjunctival sac varies with various authors.

2. This variation is probably due to the locality where the investigation

is carried on, the method of culturing, and the type of culture medium used.

3. One hundred normal cases were examined all of which were found to harbor bacteria; many harbored mixed organisms.

4. Pneumostreptococci were found present in seven per cent of the cases.

5. Pneumococci types 4, 2, and 1 were found to occur in the order mentioned.

6. Among the various media used, blood agar plates were found to possess definite advantages in this type of investigation: (a.) Most eye organisms grow readily on this medium. (b.) Colonies can be easily counted. (c.) The problem of isolation of colonies becomes greatly simplified.

7. Large tubes (8x1") of chocolate Loeffler's medium may be used to the same advantage as blood agar plates, except the latter are easier to make.

8. The presence of pathogenic organisms can be demonstrated in 1 c.c. of horse serum or Besredka's medium, within eight or ten hours.

9. Besredka's medium is extremely cheap, easily obtained, and organisms seem to thrive in this medium just as well as in horse serum.

10. The Koch-Weeks bacillus is either very rare in Nebraska or our technic has been too faulty to meet all the cultural requirements of this organism.

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THE RELATIONS OF CUPPING OF THE OPTIC DISC TO VISUAL FIELDS IN GLAUCOMA.

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Cupping of the optic disc by glaucomatous intraocular pressure is correlated with the anatomy of the nerve fibers, and underlies the impairment of the visual field. The development of the cupping, and the forms of field limitation and their significance, are described. Address to the Oregon Academy of Ophthalmology and Oto-Laryngology, April 19, 1927.

During the last decade I have been impressed with the apparent increase in the relative number of cases of glaucoma, appearing in my own practice as well as in those of my confrères. This incidence may perhaps be an isolated observation, peculiar to the rapidly increasing population of the North Western States of America, and to the circumstances that there are more elderly people than there were when I migrated here nearly twenty years ago. But the previous twenty years, in the more densely populated and early settled central states, did not show such a preponderance of glaucoma cases. True it is, that they may not

have been diagnosed as such, but I doubt that, for we were fairly well informed, even then, of the characteristics of intraocular high tension cases.

It is probable that the greater use of the eyes for near work, in cases predisposed by anatomic condition, the urbanizing of our population, consequent development of new factors productive of eyestrain, and the general bodily somatic relations changed by diet, nerve work, high tension that cause the tendency towards general acidosis, all have had some influence in its development.

I have been specially interested in the relations of the changes in the op-

tic disc to those of the visual field, the degree and character of cupping of the disc to the sectoral changes in central and peripheric vision, and in the following will endeavor to restrict my remarks as much as possible to these relations.

A number of glaucomatic cases in my practice have come to enucleation, either by reason of otherwise irremediable pain and inflammation in blind eyes, or cosmetic reasons, in cases

most of their covering and are continuous with the layers of the retina. In this there is normally a dimple from which the vessels of the retina emerge. In most of the normal eyes only faint traces of this connective tissue network are seen, as slightly whitish streaks radiating from this pit in the papilla; but when the nerve elements atrophy, as in optic atrophy, they show more distinctly.

Increase of the intraocular tension

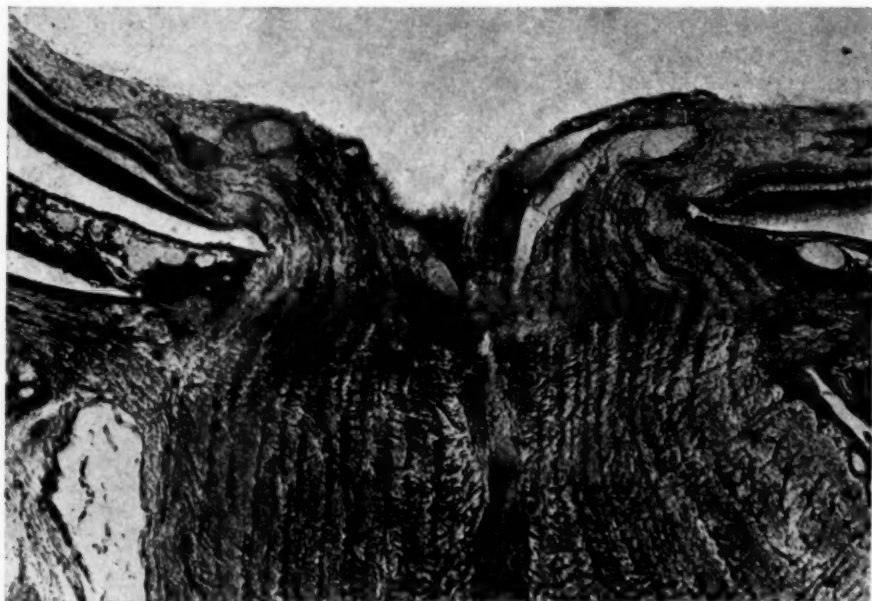


Fig. 1. Central cupping of optic disc of slight degree.

where the anterior part of the globe was staphylomatous, or I have secured the globes at the time of the post-mortem examinations, where patients have died from general disease. Photomicrographs of some of these eyes with conditions pertaining to this subject accompany this essay.

The foramen in the sclera and choroid, occupied by the optic disc, is a weak spot in the walls of the globe. There is a network of connective tissue, a continuation of the scleral fibers, the lamina cribrosa, stretched across this opening, thru which the optic nerve bundles pass, forming in the normal eye a slightly projecting mound of nerve tissue, the optic papilla, at the edge of which the nerve fibers lose

constricts the vascular supply of the optic papilla and retina, resulting in pallor of the disc, which exposes the lamina cribrosa, with the openings for the nerve fibers showing as rounded spots in the interspaces of the network. Increase of intraocular tension produces changes in the vision and the visual field dependent upon the suddenness and severity, periodicity or permanency, with different effects.

When the tension is raised suddenly, as in an acute glaucomatic attack, the immediate effect is to obstruct both the entrance of blood by the arteries and to impede its exit by the veins. Ophthalmoscopic examination, when such is possible by reason of clear media, will show the arteries to be small-

er, and the veins larger, dilated and tortuous. Under normal conditions there is no pulsation in the retinal arteries; but when the balance is disturbed the blood can only force its way into the retinal arteries during contraction of the ventricles, hence a distinct pulsation in the arteries is to be observed. This pulsation may be communicated to the veins as well. This is also to be seen in sudden fall in the blood pressure during diastole,

moved the circulation is reestablished and the vision returns.

The same effects are produced by an acute glaucoma, in which, in short time, the vision may be reduced to mere perception of light, or be completely abolished. Temporary restoration of the normal balance, either spontaneous, produced by medical treatment, or massage of the globe, accounts for the return of vision in periodic attacks. But these attacks always

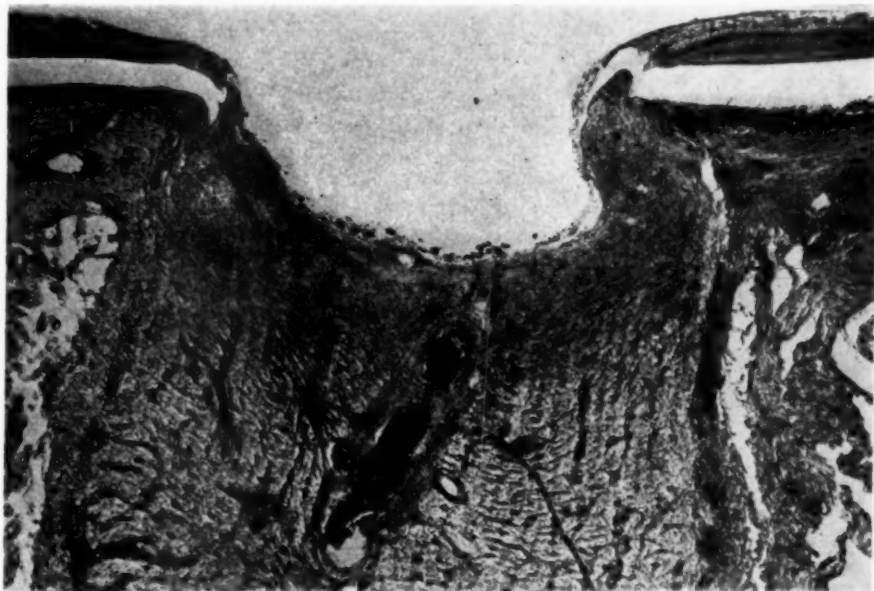


Fig. 2. Unequal cupping of optic disc with vertical wall to macular side.

in cases of syncope and aortic regurgitation without increased intraocular tension.

Demonstration of this may be made in the normal eye by finger pressure on the globe, but it must be considerable to elicit the phenomenon. The diminished blood supply to the retina causes loss of vision, even complete temporary abolishment of function, which appears first as a concentric contraction of the field of vision and then as loss of central vision, due to arrest of circulation in the retinal vessels, the terminal parts of which are seen to be empty of blood, and to obstruction of the choroidal capillaries, from which the outer layers of the retina are nourished. Directly the pressure is re-

lead up to more permanent high tension, and each attack inflicts some damage upon the retinal elements and stretches the lamina cribrosa, leading ultimately to cupping of the disc.

Establishment of drainage by iridectomy, trephining, or other surgical procedures, relieves the pressure more permanently with consequent restoration of vision, if the nerve elements have not gone on to atrophy. Loss of vision due to diminished blood supply is recoverable, that due to atrophy is permanent.

When the intraocular tension persists, the weak spot in the globe occupied by the optic disc, gives way, the nervehead is forced back and the lamina cribrosa stretches, with conse-

quent transformation of the usual projecting papilla into a cavity or cup; the amount varying considerably in the different cases, in the two eyes of the same subject, and in different parts of the same disc, to be accounted for by variations in the transverse lamellae composing the lamina cribrosa and variations in the amount of atrophy of the nerve bundles. These conditions produce the variations in the scotomata of the visual field, to be more specifically described later.

nerve emerges, is very tough and does not yield to the pressure, so that ultimately in long standing cases it projects over the cavity formed by the cupping of the nerve, overhanging its edges. Hence, on ophthalmoscopic examination the depths of the cup, the place of emergence of the vessels are to be focussed much deeper, even 6 to 8 dipters, than the edge of the crater and the surrounding retinal surface. The arteries and veins turn over the edges and seem to have a break in their



Fig.3. Extreme excavation of optic disc with overlapping scleral ring.

The cupping of the disc is therefore due to two conditions: the stretching of the lamina and the atrophy of the nerve bundles in the distal end of the optic nerve. Before the lamina gives way, there is some stretching of the posterior pole of the globe, causing traction on the retina, displacing the entrance and exit of the retinal vessels to the nasal side of the disc, where they usually emerge and which is the weakest part. At this time some signs of atrophy in blanching of the disc and visibility of the laminar network are visible.

As the pressure persists the reticular fibers give way and the cupping begins, increasing until the sides become steep. The scleral ring, thru which the

continuity, those at the bottom not appearing to join those at the margins. The cupping may become bottle shaped, the sides expanding laterally under the edge of the unyielding scleral ring.

The failure of vision in chronic hypertension is in part due to loss of nutrition and in part due to damage from the stretching and pressure. The nutrition of the retina is largely carried by the retinal arteries. The blood going to the periphery of the retina on the temporal side has a longer course to go than that to the macula and nasal side, the capillaries of the temporal branch being first affected. The vis-a-tergo of the heart is used up before the force reaches the end arter-

ies and hence the blood does not get there. Thus the temporal retina suffers first and most, with consequent development of scotoma in the nasal field. The main defects in the visual field are, however, produced by atrophy of the particular nerve fibers going to corresponding parts of the retina. The anatomic distribution of these explain the relations.

The fibers coming from the nasal side of the disc extend evenly in fan fashion

longest ones naturally receive nutrition with more difficulty, and are most affected by pressure, which shows in contraction of the visual field. The pressure on the nerve fibers, as they curl around the unyielding scleral ring, likewise disturbs their conducting power, producing irregular defects in the field of vision.

But the defects of the field vary in different cases, according to which of the fibers become most involved in the

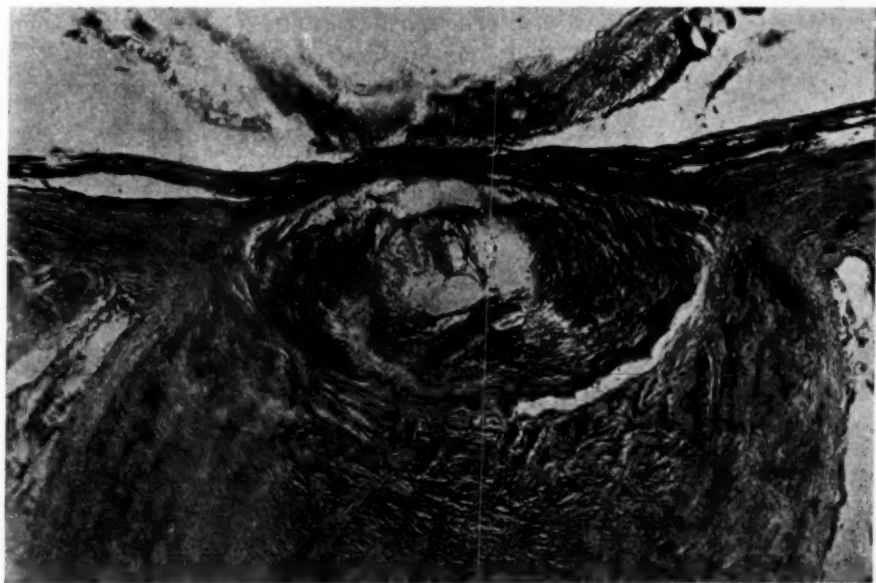


Fig. 4. Extreme excavation of optic disc with bottle shaped crater. The crater cavity is filled with extraneous tissue, and above the opening another portion of nerve and retinal tissue shows as an artefact. The walls of the crater and scleral ring are clearly defined.

to the nasal half of the retina, the *nasal fan*; those going to the macular region occupy about a third of the circumference of the disc, proceeding from the central part of the outer half, the *papillomacular fibers*. From above and below this oval shaped area, fibers arch in two distinct sets to meet in a raphé at the temporal side. These are the superior and inferior, internal and external *arcuate fibers*. See Fig. 5.

The fibers which enter the eye nearest the center of the disc go to the most peripheral portions of the retina, running the longest course, while those entering the eye at the sides go to the more central portions, taking the shortest course. The terminal parts of the

atrophic changes, and show corresponding changes in the disc as this part is the most cupped. This is dependent upon the strength of the lamina. The blood vessels also support the fibers in part by reason of their compact, rigid walls. As the blood vessels are mostly on the nasal side, the temporal is the weaker and that in which cupping generally begins and is the deepest. Those nerve fibers which run the longest course from the center of the disc to the periphery are stretched and damaged the most, contributing thereby from this cause to the contraction of the field. This contraction begins generally in the upper nasal quadrant, or the lower; depend-

ing upon the situation of the cup nearer the upper or lower margin, and involves the arcuate or arching fibers. When a sharply defined scotoma is found along the horizontal meridian, to the nasal side, it is known as Roenne's sign, or Roenne's nasal step. The contraction proceeds until the field is so circumscribed as to form an irregular area to the outer side of the fixation point, as the macular fibers go next, the nasal fan last.

The pressure on the fibers at the rim of the crater may be mostly in the arching fibers, in which case there is

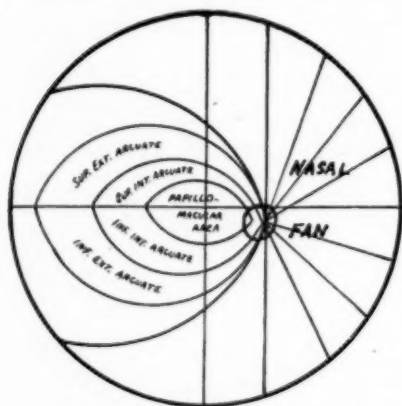


Fig. 5. Diagram showing distribution of nerve fibers in retina. (After Collins and Mayou).

an enlargement of the normal blind spot with wing like extensions known as Seidel's sign. Most or all of the arcuate fibers may be atrophied, producing a scotoma starting from the normal blind spot circling around the fixation point; if meeting at the temporal side of the field, producing a complete or incomplete annular or ring scotoma, Bjerrum's sign, with night blindness. If the scotoma extends to the temporal side, even with fair central vision, reading is greatly impeded as the patient can not follow the letters from left to right. If one of the bundles of fibers becomes affected sooner than others.

there may be isolated scotomata, or a ragged edge to a scotomatous area, known as Elliot's sign.

The order in development of defects in the visual field with loss of vision is thus: The concentric contraction, the nasal sectoral deficiency, the enlargement of the blind spot and isolated pericentral scotomata or ring scotomata, followed finally by involvement of the papillomacular fibers with loss of central vision and blindness. In nearly all cases, however, of practical blindness, there will remain a more or less functioning island in the temporal field, for the nasal fan of fibers is usually involved the last.

The atrophy of the nerve in glaucoma is thus progressive, involving one set of neural fibers after another, in contradistinction to the postneuritic and retrobulbar types, where the macular fibers are usually the first to suffer and are most involved, and in which the atrophy is participated in by all of the nerve elements in the end, and in which the types of visual fields found do not generally show such bizarre changes. The color vision being taken care of by the cones which are most abundant in the macula and perimacular regions, which are involved in the latter stages, special defects of the color field are not evident. The color fields in glaucoma are relatively as large as those for white; and form a diagnostic point of some importance, as in other atrophic types the color fields are generally more affected than those for form.

In the foregoing it has not been possible to refer to authorities, some of whose words and sentences have been included verbatim. My study of the subject, however, may be considered from both clinical and pathologic standpoints, to correlate and confirm the views of others.

709 Cobb Building

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OPTIC NERVE PALLOR WITHOUT FUNCTIONAL DISTURBANCES IN LUETICS.

J. S. SOMBERG, M.D.

NEW YORK CITY.

Among two thousand paretics, eighty-six had pallor of the optic disc, but of these, 73 had normal corrected vision. In 26 percent reduction of fields and vision supervened later. But in almost 50 percent, presenting the fundus picture of primary optic atrophy, no functional disturbances had occurred after two years. These cases were seen in the Manhattan State Hospital. Similar and related observations, previously reported, are here cited.

Discoloration of the optic nerves, antedating any changes in the visual acuity or fields of vision, and unaccompanied by such, has been noted by various observers in luetics for many years.

Keravel¹ made a study of the fundus in paresis and its initial lesions in fifty-one cases. He found that forty-two cases presented lesions of the fundi, and in thirteen of these cases the papillae were pale. Raviart² studied forty-four cases of paresis. In ten of these cases both papillae were pale, and in five only one papilla was pale or "washed-out." Visual acuity was slightly diminished in the majority of cases.

In the study of tabes, Collins³ believes that the discoloration of the optic nerves begins within five years after the onset of the disease. He regards it as an early symptom. Talbot⁴ found that forty percent of all types of syphilis showed involvement. Visual disturbances, in his opinion do not always accompany disc pallor. Uhthoff reports a case in which vision was good four years after the pallor commenced. Wilbrand and Saenger believe that the slightly pale discs seen in tabes may be due to individual structural peculiarities, simple anemia, etc., altho they believe that true optic atrophy may develop later in such cases. Such studies as those quoted above are sufficient to indicate, that some discoloration of the optic nerves, without any, or with practically no visual disturbances, have been observed quite frequently.

It has been my good fortune to study the fundi of two thousand or more cerebrospinal luetics at the Manhattan State Hospital. This group included

all types of cerebrospinal luetics. All, however, had distinct paretic symptoms, altho not all were cases of pure paresis, some undoubtedly being that mixed group known as taboparesis. However, the greater majority of these patients were true paretics, and I am of the opinion that we cannot hold ourselves strictly to the dictum that optic atrophy in a luetic usually means tabes. This study was primarily instituted for the purpose of ascertaining changes in the optic nerves, or in the visual acuity, accompanying tryparsamide treatment in this large group of luetics. No attempt is made to enter, at this time, into a discussion of the findings which have been associated with the use of tryparsamide. Any abnormal fundi in the causation of which we have felt the tryparsamide played a direct or indirect part have been excluded in the present study.

In the large group under discussion, a peculiar pale, "washed-out" appearance in the optic disc was noted in eighty-six patients, or 4.3 percent of the group. This is rather a high percentage, considering the figures quoted above. It should be noted, however, that the type of luetics seen at this hospital is rather advanced, the average duration of the disease being twenty years. In this large group, fully seventy-five percent showed other ocular changes due to syphilis, especially the pupillary reactions. In the other twenty-five percent, no ocular signs were discovered, with the exception of the discoloration.

This discoloration has varied from a slight transition from the normal healthy pink to almost complete pallor. Eighty percent of this group had bi-

lateral involvement, while the remaining had partial or complete unilateral involvement.

In seventy-three, or about eighty-five percent of this group, the vision was normal, the proper correction being worn when necessary. In the remaining thirteen, or fifteen percent, the vision was found to be subnormal, but no lower than 20/40. The lowered visual acuity in this latter group was unaccompanied by any marked changes in the visual fields, altho a slight peripheric contraction was noted occasionally.

In none of the patients under consideration were there any evidences of any marked vessel change, other than that usually observed in patients of this age. Occasionally, a slight retinal arteriosclerosis was noted; but at no time were there any distinct changes which would suggest a luetic endarteritis. The fundus picture was also otherwise entirely negative in this group of patients. Those patients in whom a complicating chorioretinitis, or previous optic neuritis had occurred, or in whom there were evidences of a previous iridocyclitis or iritis were not included in this group.

Most of these patients were under constant observation for a period of almost two years. In a large number of these, however, the observation did not extend over such a period of time, due either to early demise, transfer to other of the state hospitals, or possibly due to a markedly disturbed condition which rendered proper examination impossible. It should also be noted in passing that the fields of vision taken on this group of patients are not accurate, due to the psychic disturbance. But such statements as are made concerning them are made in the full belief that proper allowance has been made for this condition. During this time accordingly, the visual acuity and fundi were repeatedly examined and the fields of vision taken whenever possible.

Careful examination of the retinal vessels, and, if possible, some parts of the choriocapillaris, was made in all these cases while under observation. At no time were any changes noted in

these vessels. The lack of this positive proof, however, does not absolutely eliminate such changes, since it is very generally acknowledged that very marked retinal endarteritis will frequently be unrecognized during life.

In this period of two years, gradual changes were observed in a certain proportion of the cases. The first change noted was usually an increase of the pallor, unaccompanied by any other changes. As this pallor deepened, in some a slight contraction of the fields became noticeable, as compared to the previous examination. Visual acuity was undisturbed, however, at this stage. There were no distinct changes noted in the vessels. Special attention was paid to the small capillaries on the surface of the optic disc, but no changes were observed in these small vessels at this stage. After the pallor had deepened and had gradually become fairly white, it was then noted that a rapid constriction of the fields of vision, together with a less rapid diminution of vision became evident in twelve of these patients. In eight of the patients this constriction of the fields, together with a diminution of vision from 20/20 to 20/70 or 20/100 occurred within a period of two weeks. In these patients at no time was there any evidence of a central scotoma, either relative or absolute, for colors or for form, indicating that there was probably no retrobulbar neuritis. No accompanying changes occurred in the retinal vessels, nor were there any apparent changes in the macula or other parts of the retina. The lamina cribrosa was not evident in most of these patients at this stage.

The disc finally became chalky white and the lamina cribrosa then became evident. The vision was reduced finally in twenty-two, or twenty-six percent of these patients, to 20/200. In twenty-four, or twenty-eight percent, it varied between 20/50 and 20/100. The visual fields became markedly constricted where the vision was reduced to 20/200, but in the other patients the restriction was not so marked and not so regular, the periphery being fairly irregular and marked by distinct notches, or reentering

angles. Occasionally changes were noticed in the fields of vision in the same patients on two successive examinations. The blind spots have become enlarged, but never sufficiently to involve the point of fixation.

In the remaining forty the pallor of the discs have varied from a pale orange to a distinct chalky white and no changes have, up to the present time, been noticed in the fields of vision, nor has there been any diminution of visual acuity, below 20/30. Several of these patients have been luetic, with a paretic trend, for several years. Others are a combination of the spinal and cerebral form, while others are of the generalized parenchymatous type. Ages have varied considerably, the youngest patient being 26 and the oldest 54. The average age is 38. A very interesting private patient, referred to me by a neurologist, has shown also a marked bilateral optic disc pallor, the fundus picture of a primary optic atrophy of the tabetic type. Nevertheless the vision is 20/20 in either eye and there is no constriction of the fields of vision, with the exception of a narrowing for green and a slightly enlarged blind spot for green. The lues in this patient has existed for practically thirty years, and there are distinct taboparetic manifestations present.

There is, in this series of patients, the very interesting fact that the pallor of the optic discs was the sole prodromal symptom of a partial or complete optic atrophy which was to occur at a later period, altho the atrophy has not as yet become manifest in forty-six of these patients. The exact mechanism of this pallor is very difficult to explain without any pathologic examination of any such eyes. As yet I have been unable to obtain eyes for such study, but in the near future it may be possible to elucidate the condition on a pathologic basis. Apparently it is possible for pallor of the disc to occur without any changes in the vision, either direct or peripheral, altho at a later time such changes do become manifest.

That this pallor is not of retinal origin is borne out by several facts. In

the first place no changes in the vessels either retinal or, as far as could be possibly determined, choroidal, were noticed on repeated examinations, with this possibility in view. That such changes may occur without any ophthalmoscopic evidence is quite possible, especially in the choroidal vessels. Such changes were quite recently reported by Martin Cohen.⁵

The retinal elements have been apparently uninvolved at any time during the early observation of these patients. The visual function remained normal until almost complete optic atrophy had supervened. The uniform concentric contraction of the field in the large percentage of patients suggests that involvement of the ganglion cells occurs secondary to the optic nerve involvement in these cases. At no time did any central scotoma or any other type of scotoma appear during the progression of the condition, indicating that the retinal elements were involved only secondarily, if at all.

The optic atrophy finally observed in those cases in which the vision became deteriorated, with changes in the field, is not that usually seen secondary to retinal changes, unless it be of a degenerative nature, in which the ganglion cells of the retina are primarily involved. It is quite probable, in the opinion of the author, that degeneration of the ganglion cells may be the prime factor in the production of a primary atrophy. This is observed in several conditions. In tabes the peripheral sensory neurone is attacked, either in the posterior root of the spinal column, or in the ganglion cells of the retina. In paresis, however, the central neurones are usually attacked, and if the peripheral neurone is finally attacked, it is then only indirectly by the propagation of the degeneration from neurone to neurone.

It has always been difficult to harmonize the fundamental theory of Wallerian degeneration, with the development of a picture of optic atrophy as observed in the fundus when there has been a lesion in the optic pathways, since the neurone of the optic nerve fibers lies in the ganglion cell layer of the retina. Accordingly, it

is reasonable to assume that where an optic atrophy of the primary type does develop, there must be corresponding ganglion cell changes. This, however, has not always been borne out by a pathologic study, altho our usual methods of preparing such specimens, together with the long interval of time elapsing between the onset of the optic atrophy and the examination, are factors which have hindered such careful examination.

This is borne out, experimentally, by the work of Falchi⁶ and by Baquis⁷ and Pick.⁸ Sections were made of retinal quadrants and a resulting degeneration occurred in the quadrant of the optic nerve which was a typical primary degeneration. In 1896, Dean and Usher⁹ performed similar experiments. After section of the optic nerve, they found that the atrophy extended both ways, but more rapidly towards the brain.

Wagemann¹⁰ found that after section of the optic nerve in the orbit, the result varied according to the amount of vascularization discharged. If the central vessels of the nerve were cut there was rapid degeneration of the ocular end of the nerve, and also considerable retinal disturbances—the latter depending greatly upon the number of ciliary arteries cut. If the section was farther back so that the central artery was not damaged, and the ciliary vessels disturbed as slightly as possible, then the atrophy took place very slowly toward the eye, as compared with the central stump, so that after six months a great many fibers in the ocular end still remained intact. The length of time these fibers may survive has not been determined experimentally. These experiments definitely prove that the peripheral degeneration was more rapid if the retinal arteries were also involved in the section, indicating that there was also ganglion nerve involvement.

Krenchel¹¹ and Hamburger¹² found in frogs no atrophy of the retinal ganglion cells or intraorbital portion of the nerve after six months, except a millimeter or so from the section. Birch-Hirschfeld¹³ claims to have noted mi-

nute changes in the retinal ganglion cells by the delicate Nissl method, in fifty-five hours after section. It should be noted that in this experimental work we are dealing with acute lesions, which differ greatly, of course, from the ordinary chronic lesions under consideration. Sachs¹⁴ feels that the condition may represent, however, an early peripheral atrophy, of the centrifugally running fibers, exactly as the initial atrophy in the tracts represents the peripheral atrophy, of the centripetally running fibers, and the atrophy in the nerve may be regarded as a simple atrophy, both ascending and descending.

The pathology of luetic simple atrophy has been a subject of considerable investigation and dispute. Fuchs¹⁵ states that the pathology consists at the onset of discrete foci lying in the trunk of the optic nerve, and appearing grey. The nerve fibers lose their white, medullary substance, and are transformed into extremely minute fibrillae and hence the inner tissue acquires a grey and translucent appearance, similar to that seen in the posterior columns of the cord in tabes.

Between the remnants of the nerve fibers are found phagocytic cells filled with fat granules. In the later stages, secondary changes occur, consisting of a moderate thickening and sclerosis of the connective tissue septa and multiplication of the glia nuclei. Along with the degenerative changes above outlined, inflammatory exudates occur, and many hold that the inflammation may precede the degeneration so that the expression "simple or primary atrophy" is a misnomer.

Cruveilhier, Virchow, Uhthoff and Wilbrand and Saenger all find the picture of a simple grey atrophy. Moxter and von Michel, Elschnig and Glikemmann, in their pathologic studies, found a degeneration of the retinal ganglion cells, with a resulting beginning, ascending atrophy in the retinal nerve fibers. Such pathology would undoubtedly be more satisfactory in the explanation of primary optic atrophy. Keravel and Raviart¹⁶ found degenerative retinal changes plus prolif-

erative changes in the nerve and its vessels, indicating a previous luetic inflammation.

Marie and Leri¹⁷ examined sixty tabetic and parietic optic nerves. In those with atrophy, they found evidence of a previous active inflammation in the nerves or visual tracts. Ganglion cell degeneration was also noted, but the changes in the nerves were more marked and they conclude that the first lesion is in the nerve and is the ordinary peri- and endovascularitis of tertiary syphilis. As the vessels become obliterated, connective tissue is formed and the nerve becomes atrophic.

Stargardt¹⁸ examined completely the retina, nerves and optic tracts in twenty-one tabetics and parietics. He confirms Marie and Leri's findings. In all atrophy there was evidence of an active luetic inflammation, infiltration of pia and pial septa extending into the nerve and around the vessels. In eight early cases the changes were in the nerve, without any evidence of a retinal lesion and, in his opinion, the term "primary optic atrophy" is a misnomer, since the atrophy is always the result of an interstitial inflammatory change. It is quite obvious that there is a diversity of views regarding the primary pathology of ordinary luetic atrophy.

Collins¹⁹ believes that the pallor is an early symptom; and, in his opinion, the changes probably start peripherally in the retina. If such were the case we would expect to find distinct contraction of the fields of vision, which occurred, however, only as a late symptom in these patients, indicating that whatever retinal changes were present were only secondary, such involvement finally giving the rapid diminution of vision. None of the patients exhibited any marked anemia or malnutrition sufficient to account for the pallor of the discs, altho Wilbrand and Saenger are prone to regard the condition as due to anemia; this is not borne out in this group of patients.

Another possibility is that we are dealing with a degeneration which is not involving the whole optic nerve,

but sufficiently to cause the pallor described. Such a condition would cause certainly an irregular involvement of the fields of vision, and scotomata would be a distinct possibility. Such, however, has not been found in this group of patients in any part of the course of the condition, with the exception that notching and irregularity of the peripheral fields have been noticed in one group of these patients. It is quite possible that minute scotomata have been overlooked in the routine examination of these patients, all of whom at one time or another showed marked psychic symptoms.

That the changes may be limited primarily to the vessels of the disc, due to an endarteritis, is another possibility. Such involvement would explain the early pallor of the disc without any evidence of disturbed function. However, it is impossible to correctly judge the condition of these disc capillaries by means of the ophthalmoscope. Such conditions do occur in certain types of retinal arteriosclerosis.

The changes may be limited primarily to the involvement of these small vessels supplying the optic nerves, together with the central supporting strand which accompanies the vessels in the course of the optic nerve. Such involvement would cause a pallor of the disc. The changes may not be apparent at the surface which is viewed by ophthalmoscopy, since the deeper portions in the scleral canal are involved first. These small blood vessels are found in all portions of the nerve framework and give the normal pink color to the optic nerve. Involvement would cause, therefore, the picture of pallor without any deviation of normal function, and finally, atrophy, due probably to ganglion cell degeneration. That such deviation of function with a diminution of visual acuity and field changes does evidently occur is shown in one of the groups described above.

The exact pathology of such changes which would involve these smaller vessels is rather difficult to solve. There is a distinct communication between the choroidal and retinal vessels in the scleral ring, by means of the circle of

Zinn, and these smaller vessels of the central connective tissue strand are derived both from this communication and, to a less extent, from the central vessels. It is quite possible that chorioidal vessel changes, in the nature of either an endarteritis or perivasculitis, are underlying factors which hitherto have been overlooked in pathologic section, except in the work of Martin Cohen.⁵

Such changes in the small vessels supplying the optic nerve and its septa cause a great shrinking eventually, due to the contraction of connective tissue so that optic atrophy is finally the result with functional changes. The differential diagnosis from an optic atrophy secondary to a lesion of the retina or in the tracts would depend, therefore, upon the condition of the interstitial tissue. The vessels would either be obliterated entirely, or show changes typical of an endarteritis, possibly with distinct inflammatory signs. Such pathology would agree very well with the findings of Marie and Leri, and indicate why it is possible to obtain such a distinct pallor, without any involvement of the axis cylinders of the optic nerve, and, consequently, accompanied by no functional disturbances over a distinct period of time. It is the author's opinion, furthermore, that the final distinct functional changes are the result, not only of this

secondary grey atrophy, but also of a true primary atrophy caused by involvement of the retinal ganglion cells.

As stated above, no pathologic specimen has so far been obtained for a complete study, but eventually the author hopes to be able to publish such and confirm his opinion concerning this peculiar condition of apparent atrophy without any visual or field changes.

CONCLUSIONS.

1. In a group of two thousand luetics with paretic symptoms, eighty-six, or 4.3 percent were found to have a peculiar pallor of the discs.

2. In twenty-six percent of this group, optic atrophy with reduction of vision and fields changes has finally supervened.

3. In twenty-eight percent such optic atrophy has been incomplete.

4. In almost sixty percent of this group the fundus picture of primary atrophy is present, without any marked functional disturbance, after a period of two years. It is quite probable that functional disturbances eventually will occur in this group also.

5. The most probable cause for this pallor without functional change is involvement of the small vessels of the central connective tissue strand of the optic nerve.

60 E. 67th St.

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NOTES, CASES, INSTRUMENTS

COMBINED CORNEAL SPUD.

ALFRED DEAN, M.D.

GRAND RAPIDS, MICH.

In removing foreign bodies embedded in the cornea my experience gained in the past three years has convinced me that the combined sharp and dull corneal spud offers a decided advantage over the individual instruments. And so satisfactory has the one that I have been using proven in my hands that I had the E. B. Meyrowitz Co. make up a finished article.

CASE OF POSSIBLE ROENTGEN RAY KERATITIS.

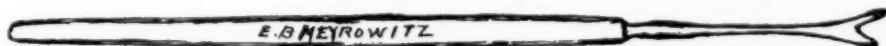
G. L. KING, PH.M., M.D., AND GEORGE L. KING, JR., A.B., M.D.

ALLIANCE, OHIO.

Pathologic changes in the various structures of the eye due to exposure to Roentgen rays have been reported by many observers, but they are sufficiently rare and varied to make them of great diagnostic interest.

We have recently seen a case which presents the strong probability of its be-

Sharp pointed
Double edged



Dull pointed
Knife edged

Fig. 1. Combined corneal spud of Dean.

The instrument is $5\frac{1}{2}$ inches in length. The handle is 4 inches, from which extends a slender shaft, which near its extremity broadens and flattens; and from which two blades are formed, separated by an angle of 45 degrees—or each $22\frac{1}{2}$ degrees obliquely from the shaft. The longer one, 5x1 mm., is mediumly sharply pointed and has a double knife edge, which permits a forward cutting or backward cutting stroke, at the same time not being so sharply pointed but that it can be used as an elevator when used in the lateral or scraping position. The shorter blade, 4x1 mm., is bluntly rounded at its extremity, with a knife edge which functions best when used in the lateral position as a scraper or elevator of superficial foreign bodies.

The construction of the instrument is such that when held in the pen position it permits the rotation from the sharp to the dull spud without changing position of the operator's hand.

Medical Arts Building.

ing keratitis and conjunctivitis due to such exposure. A careful search of all the available literature, and personal communications from other ophthalmologists of broader experience, have failed to give any definite information on this particular phase of Roentgen ray injuries. We submit this report with the hope that it may provoke discussion that will be beneficial to all concerned.

I. B., a graduate nurse, aged 30, was first seen by us July 28, 1927, with a complaint of pain, lacrimation and photophobia of several weeks duration, more marked in the left eye at the time of observation, but also having been present in the right eye. She gave the following history: In February of this year she began a series of Roentgen ray treatments for acne of the face, taking these once a week for three weeks, then at intervals of two weeks and a month until eight treatments in all had been given. In one of these the tube was focused on the forehead, one on the chin and the remainder on the whole face. After each treatment she had marked swelling of the face and eyelids, and even after the first

exposure was conscious of a peculiar sensation in the eyes which she could not accurately describe.

In June she first noticed a mild conjunctivitis of both eyes, together with some photophobia. The conjunctivitis seemed to clear somewhat under treatment, but the photophobia gradually increased until after her last exposure two weeks before being seen by us, when it became very severe and a week later forced her to go off duty. She has had no more Roentgen ray therapy since that time. She was treated for catarrhal conjunctivitis for several weeks before our observations.

She reported that during the exposures she was always able to see the light in the Coolidge tube altho an effort had been made to cover her eyes. She had called the attention of her roentgenologist to the effect on her eyes, but he had ridiculed the idea of its being connected with the treatments. The previous history was negative, patient having always been well and in good general health. No previous trouble with the eyes except that she had worn a correcting glass some years previous.

General physical examination was negative, except for the acne scars on the face. The right eye showed a mild conjunctivitis but the media were clear and the fundus normal. The vision was 20/20 uncorrected. The left eye was the seat of a marked hyperemia of the palpebral and ocular conjunctiva. The whole upper half of the cornea was hazy, and showed a keratitis of the deeper layers of the cornea without any evidence of roughening or superficial ulceration, together with several similar horizontal streaks on the lower half of the cornea. It did not stain with methylene blue. The pupil was regular and equal to the right, reacted to light and accommodation. The photophobia was so extreme that ophthalmoscopic examination was difficult, but the fundus was clearly seen and found to be normal. The vision was 20/40 uncorrected.

No cause other than the Roentgen ray exposure could be discovered for the condition. The Wassermann was negative, teeth and sinuses were apparently in good condition. Both smear and culture

from conjunctival sac were negative for pathologic organisms.

The eye was treated symptomatically with atropin, hot fomentations, and mild antiseptic irrigations and at the present writing, August 19, the cornea is entirely clear and the symptoms absent. There is still some slight congestion of the ocular conjunctiva.

It is greatly regretted that we were not equipped to examine this case with the slit lamp while in the acute stage; but we feel that we have studied it as carefully as possible under the circumstances and would appreciate suggestions of any kind.

537 E. Market St.

A SATISFACTORY CHIMNEY FOR USE IN RETINOSCOPY.

EUGENE M. BLAKE, M.D., F.A.C.S.

NEW HAVEN, CONN.

Having been taught that retinoscopy is the one most valuable and accurate of all objective methods of estimating the refraction of the eye, I have never departed from the faith. Years of experience have only confirmed this belief, and when thoroly understood and painstakingly applied the results of a careful retinoscopy are as dependable as those which follow the application of any other law of physics. Therefore, when one hears an ophthalmologist say rather lightly, that retinoscopy is only a valuable aid in refraction work, it is difficult to avoid the conclusion that he does not get the most out of his retinoscope. Since the matter of light is so important a factor in satisfactory retinoscopy, I am inclined to feel that the cause of his skepticism may lie in improper illumination.

Experiments with many types of electric light bulbs, clear, frosted, tinted, spiral wire, daylight and others, have never given me as satisfactory results as gas light, and after attempts to use electricity I have always turned back to this illuminant. Nor have the electrically lighted retinoscopes proved as useful as the small plane mirror for reflecting a good gas light.

The chimney with a diaphragm does not meet all needs, as the opening usually

allows too small a field for easy use in inspection of the globe and the use of the reflecting ophthalmoscope. The flame without a chimney is too trying to the operator's eyes and does not permit the fine results of the bright light behind a small aperture. After several attempts

is cut into the chimney. This window is closed by a hinged door which has a 13 mm. opening in the center. The opening should be so placed that it is opposite the brightest part of the flame.

For inspection of the lids and anterior segment and for the reflecting ophthal-

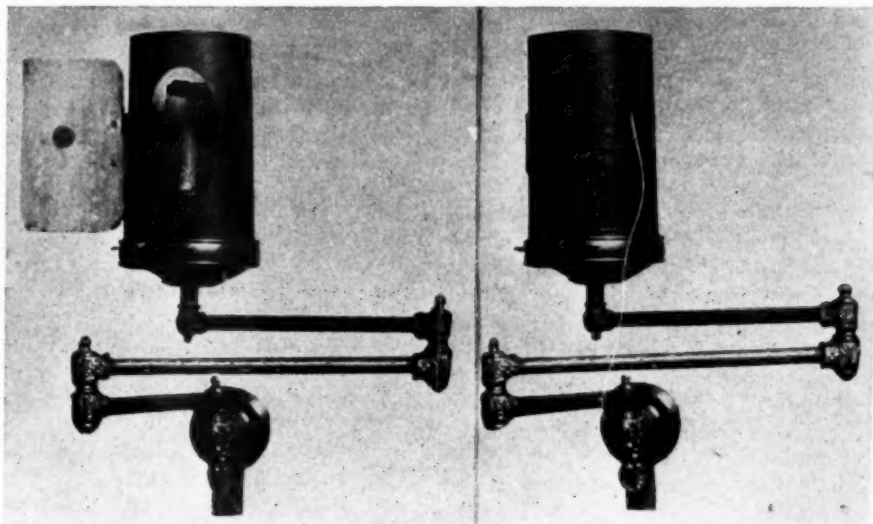


Fig. 1

Fig. 2

Fig. 1 and Fig. 2. Chimney for use in retinoscopy. Fig. 1 Window open, hinged door turned aside. Fig. 2. Window closed for retinoscopy.

at making a chimney which combined the advantages of both the large aperture and small hole, I have succeeded in having one made which is not only simple and inexpensive but, in my hands, most useful.

The light used is an ordinary Welsbach Junior, on an adjustable bracket. The chimney is made of tin, painted a dull black on the outside and is 15 cm. high and 8 cm. in diameter. A large oval window, $8\frac{1}{2}$ cm. long by $4\frac{1}{2}$ cm. wide,

moscope the door is open, and plenty of light is obtainable. For retinoscopy the door is closed and a small, bright source of light is available, which brings out the central fundus reflex much more clearly than a large source of light can do. Even after hours of use the door does not become too hot to be opened by the fingers. This simple chimney can be made for a very nominal sum by any instrument or optical house.

121 Whitney Ave.

SOCIETY PROCEEDINGS

THE MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

July, 1927.

DR. P. M. FARRINGTON, Presiding.

Modified Lynch Operation.

DR. L. LEVY presented H. F., colored, showing results of modified Lynch operation for suspected rupture of ethmoids into orbital cavity.

Eight weeks ago the patient first noticed dimness of vision in right eye and about six weeks later the eye began to protrude. There was no history of purulent discharge from the nose altho roentgen ray pictures showed some cloudiness of the sinuses on the right side with very small frontals. Eye examination made by Dr. Stanford showed vision O.D. 20/25, O.S. 20/20 plus. Ocular movements were normal. Ophthalmoscopic examination was negative. Wassermann was negative.

At operation, following the Lynch method, there was found upon opening the right frontal sinus a rather thin pulsating membrane and a slight odor as of foul air. There was no pus and upon opening farther back into the ethmoids nothing to cause exophthalmus was found. Upon pressing the orbital contents well forward a mass protruding at the outer side was seen. This proved to be a fatty tumor, part of which was excised.

Operation was done under local anesthesia and the wound was closed only with skin clips. A small amount of vaseline packing was inserted into the frontal cavity and brought thru the nose. The middle turbinate in this case was not disturbed.

The patient was presented at this time still showing some exophthalmus, but less than before operation. This seemed now to be slowly going down.

Discussion. DR. J. B. STANFORD could not palpate any tumor in the orbit. He doubted the history in this case and believed the exophthalmus was present longer than six weeks. He thought a chronic ethmoid had ruptured into the orbit.

DR. P. M. LEWIS noted that there was still considerable exophthalmus present and thought there must be still a good deal of pathology in the orbit. Some small tumors in the back of the orbit were hard to find. There might be a tumor present in the intraconar muscles which could be exposed only by a Krönlein incision.

DR. LEVY said he had removed much fatty tumor and that there was considerably less exophthalmus now than before operation.

Central Choroiditis.

DR. R. O. RYCHENER reported the case of Mrs. T. E., aged 35, who was seen May 16, stating that for a week the vision of the left eye had been blurred, especially in the lower half of the field. For some time there had been some dull pain over the left antrum and both frontal sinuses.

Vision was, O.D. 15/15 and J-1., O.S. 2/200 and J-16, unimproved by refraction. Pupillary reaction and tension were normal. Ophthalmoscopy O.S. disclosed a large physiologic cup. The macula was edematous and there was a grayish yellow patch about the size of the disc located above the fovea. There was an absolute central scotoma in the left field.

Search for the etiology of this lesion was instituted. Urine was negative; nose and throat examination was reported negative; roentgen ray of the teeth showed two suspicious possibilities. After several days these teeth were removed, extraction of the upper left cuspid causing an opening into the left antrum and disclosing what seemed to be an acute maxillary sinusitis, which drained into the mouth.

Two days later, on May 23, vision O.S. was 15/30, while the macula showed an excavation of the choroid with beginning deposition of pigment. On May 31, vision O.S. was 15/40; on June 2, vision O.S. 15/25; on June 8, vision O.S. 15/20, and the macular lesions appeared quiescent, but showed well advanced atrophic choroidal changes. On July 3, vision O.S. was 15/13 and J-1.

Retrobulbar Neuritis.

DRS. E. C. ELLETT and R. O. RYCHENER presented the case of Miss S. B. G., aged 24, who was seen April 30, 1927, stating that the vision O.D. had been blurred for three days and that there was some indefinite pain over this eye.

Vision was, O.D. 15/30 and J-8, unimproved by glasses; O.S. 15/13 and J-1.

The visual field O.D. showed a relative central scotoma involving the normal blind spot and the temporal half of the ten degree zone. Ophthalmoscopy with dilated pupil was entirely normal, except for a slight prominence of the nasal edge of the disc. Diagnosis of retrobulbar neuritis was made.

During February, 1927, she had consulted Dr. S. Evans following an influenza, and had been treated for an acute ethmoiditis with the usual nonsurgical methods. She was sent to Dr. Evans again, who reported a bilateral posterior ethmoiditis and daily treatment by suction and drainage was instituted. There was apparently instantaneous response to treatment.

On May 2, vision O.D. was 15/30 plus 4; May 3, vision O.D. 15/20-2; May 4, vision O.D. 15/20; May 7, vision O.D. 15/16; scotoma had disappeared; May 9, vision O.D. 15/13 and J-1, and remained so to date, July 4.

Discussion. DR. J. B. STANFORD said these cases were not uncommon, but that it was unusual to get them so early. It was his experience that usually the patient waited so long before consulting the oculist that enough damage was done to the nerve so that a late optic atrophy was produced.

He remembered a boy who while playing tennis noticed he was unable to focus so as to meet the ball, and on examination was found to have a vision in one eye of 2/200. There was an acute ethmoiditis which was operated on with restoration of vision. However, he later developed an optic atrophy in this eye.

DR. LEVY called attention to Dr. White's recent publication in which he now advocates treating ethmoiditis

by nonsurgical methods. This case was a striking example of his latest teaching.

Dr. R. Harris spoke of a case of retrobulbar neuritis due to pansinusitis in which the vision was, O.D. 4/200, O.S. 20/20. After treatment of the sinus pathology the vision O.D. became 20/20, O.S. 20/30. He thought there was some atrophy of the left nerve.

M. B. SELIGSTEIN,
Secretary.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Section of Ophthalmology.

April 21, 1927.

DR. EDWARD SHUMWAY, Chairman.

Congenital Albinism.

DR. WALTER J. SENER presented an infant, W.B., aged 4 months, who showed complete congenital albinism. He advised dark glasses and a protective bonnet.

The child is the only member of the family that has this condition on either the mother's or father's side.

Cataracta Caerulea.

DR. WALTER J. SENER exhibited Miss E.H., aged 22, who had blue cataract and a choked disc. Every possible laboratory test was made to try to determine the cause of her condition but the only thing found was that she had decidedly concentrically contracted visual fields, contracted down to about 8 degrees on a Peter hand campimeter; a few hyaline casts, and a trace of albumin in the urine.

Her vision after refraction was 20/20 O.D., and 20/40 O.S.

She improved physically, but her vision, to the time of this report, remains the same.

Discussion. DR. G. E. DESCHWEINITZ referred to the frequency with which various forms of cataracta punctata are revealed by examination of the lens with the aid of a Zeiss loup, and especially by means of a slit lamp. He quoted Paul Roemer's statement that with the exception of a subcapsular cataract, it is the

form of cataract most frequently seen in old people.

Referring to those varieties in which the roundish and point like lesions have a bluish, often sky-blue, color—hence the term "*cataracta punctata caerulea*," he described the various dispositions the lesions assume, namely, those that are seen chiefly in the anterior portion of the lens, the opacities being ellipsoid in form, and arranged, to use Roemer's term, like "palisades," situated in the preequatorial zone, the equator being unaffected, between which are numerous collections of fine bluish points; to the various globular opacities and clouds of minute bluish dots, like star dust, and to the lesions often just beneath the capsule, but also more deeply placed, which resemble fragments of a fern leaf; and to the creation centrally of a Y-shaped figure built by a coalescence of roundish lesions; and to the combination of coronal cataract (Vogt's cataract), being a wreath like zone in the form of roundish or oblong opacities in the area of the "nuclear equator," and the lesions of *cataracta caerulea*—hence *cataracta punctata caerulea* et *cataracta coronaria*. All these manifestations, he said, constituted the most beautiful of slit lamp pictures.

Altho punctate cataract is often classified among the congenital forms of cataract, it is more probable that while some varieties may be congenital in origin, the majority of them appear between the tenth and twentieth years of life, especially, as Butler has pointed out, because the opacities are largely in a portion of the lens unformed in infancy.

Usually the vision of patients with punctate caerulean cataract, even when the lesions are extensive, is good, and the development of the opacities is only slowly progressive, and Dr. deSchweinitz referred to several patients under observation for many years, in whose lenses the process had remained stationary.

He had been impressed by the slight and often casual reference to this form of cataract in textbooks, with a few exceptions. This type of cataract in its true characteristics is only satisfactorily detected if the lens tissue is studied by means of a loup, or with a slit lamp.

Judging from personal experience, the association of punctate caerulean cataract and high refractive error is not uncommon. In six patients recently studied, two had conical cornea, one a high mixed astigmatism, and one a considerable myopia and astigmatism.

DR. T. B. HOLLOWAY stated that he had described the various types of caerulean cataract to which Dr. deSchweinitz had just referred. Some years ago the literature on this subject was scanty, and doubtless many cases were overlooked. In addition to the contribution of Pearce, Rankin and Ormond, van der Scheer has reported concerning 60 cases observed in Mongolian idiots, and found that there was an increasing tendency among these cases to this type of lens change until after the age of seventeen, when practically all of them showed defects in the lens.

With the ophthalmoscope they are invariably missed, and the opacities appear much smaller than when seen by oblique illumination, and by this latter method the blue color when present can be readily recognized. Dr. Holloway felt that much was missed in the study of cataract cases by not using the oblique method of illumination.

He contrasted the diagnosis of caerulean cataract, where the diagnosis was dependent upon oblique illumination, with the Vossius ring cataract, where the diagnosis could but rarely be made by oblique illumination, this being determined by means of the ophthalmoscope.

In regard to the cause of the color, he was under the impression that Lord Rayleigh had attributed this to a difference in the refractive index of the fine particles, causing dispersion of the short wave lengths.

Superficial Linear Keratitis.

DR. J. C. KNIPE exhibited a case of superficial linear keratitis in a man, aged 58, in which eight or ten vertical lines extended above and below a central area of the cornea which stained in a punctate manner with fluorescein. The lines did not stain except about the central area. The lines corresponded to the description of the cases of Spicer and Greeves. They were slightly raised, double contoured, and tapering toward the extrem-

ities near to the limbus. The slight pain and injection, both conjunctival and ciliary, subsided in a few days, but the striations are still visible, altho less prominent, three weeks later. The tension is slightly reduced.

The etiology could not be determined, unless many carious teeth was the disturbing factor. The patient was in good health. The blood and urine reports were negative. There was no history of injury.

Discussion. DR. G. E. DESCHWEINITZ stated that altho folds and rupture of Bowman's membrane, following injury and in association with corneal scars, and sometimes with analogous folds in the Descemet's membrane, appearing as double contoured lines, are not uncommon, the affection so well described by the essayist, and particularly investigated by Spicer and Greeves, with wrinkling of Bowman's membrane and the formation of new fibrous tissue in the adjacent substantia propria, is certainly unusual.

In his own experience only one case certainly of this character had occurred, and followed injury. But, altho injury may be a contributing factor, as has been pointed out, it is difficult to believe it is the essential cause, which, indeed, is not assignable. In his own case the results of treatment, so long as the patient remained under observation, were of indifferent value. Evidently the letter or alphabet keratitis of Haab should be regarded as a process similar to, if not exactly like, the linear keratitis of Spicer and Greeves.

Exhibition of a Case of Neurofibromatosis.

DR. WM. ZENTMAYER exhibited a case which was referred to the Wills Hospital by Dr. Fordyce for the correction of ptosis. Examination showed the ptosis to be due to a hypertrophy of the outer half of the lid. On palpation, this was baggy and soft. The external orbital margin was thickened. Just behind the external angle there was a depression in the temporal bone. In the parietal region there was a slightly elevated hemispherical mass about 7 cm. in diameter composed of a plexus of dense, cord like fibers with bead like swellings along their course. The fundus was normal.

The report from the neurologic clinic was negative. The roentgen ray showed complete erosion of the clinoid process.

Neurofibromatosis with ocular involvement is a rare condition. According to Fuchs, there is sometimes associated a lymphangioma of the lid, and Collins speaks of a general connective tissue hypertrophy of the lid. It is well known that neurofibromatosis is sometimes associated with buphthalmos.

While this condition of the eyeball is not due to elephantiasis, yet sometimes the ciliary nerves show fibromatosis.

The pathology is one of hypertrophy of the epi- and perineurium without involvement of the axis cylinder.

Discussion. DR. BURTON CHANCE desired to put on record two cases resembling Dr. Zentmayer's; the children, sisters, were younger than his, who were brought to the Wills Hospital from the country by the district nurse, in 1920. The symptoms in each were confined to one side, and were quite the same. The upper lid drooped and had a wormy feel; there was hydrophthalmos, and the bone deficiency like that observed in the orbital region of the child here present. It is not recalled that there were anomalies in the scalp.

DR. T. B. HOLLOWAY stated that the appearance of this case bore such a striking resemblance to a case he has had under observation for four or five years, that the diagnosis was suggested as soon as the patient was seen. At the time his patient came under observation the lesion appeared at the outer end of the right upper lid near the orbital margin, and naturally the possibilities of a dermoid cyst were suggested. In the careful dissection, long needle like filaments were dissected out, some of these attaining a length of three or four inches, but when *in situ* they were tightly coiled. The specimen was submitted to several pathologists before the diagnosis was subsequently made.

Since the first operation, a mass has been removed from the margin of the right temporal fossa. There is another large group in the right occipital region and a solitary lesion just above the left eyebrow.

Unilateral Papillitis Due to Ethmoiditis.

DR. WM. ZENTMAYER presented A.B., female, 20 years of age, single. On April 4, she rapidly lost the vision of the left eye, becoming, she believes, absolutely blind. Twenty-four hours later vision was hand movements, and the field showed an absolute scotoma of about 50° extending about 30° to the temporal side, 20° to the nasal, 25° above and 30° below. The pupil was partially dilated and reacted sluggishly. The fundus appeared normal.

The possibilities lay between hysteria and retrobulbar neuritis. The Wasserman was negative, and the neurologic examination negative except that the history suggested the possibility of hysteria.

Forty-eight hours later there was a papillitis of two diopters, with a great deal of retrobulbar pain, especially on movement of the eyes. The roentgen ray showed a slight clouding of the maxillary sinus. The nasal examination showed pus apparently coming from the sphenoid.

Sphenoidectomy and ethmoidectomy were done. No pus was found. The patient, however, was relieved of all pain by the procedure. There has been a gradual improvement in the vision so that one week after operation it was 1/30, and the field showed a relative scotoma of about 35° in extent, 15° to the nasal side, 25° to the temporal, 20° above and 15° below. The swelling of the nerve was about one diopter.

The retrobulbar pain and the existence of blindness several days before the manifestation of the fundus changes, and the pain behind the eye and on movements of the eyes, indicated retrobulbar neuritis. The negative physical and laboratory findings suggest sphenothmoiditis and this is borne out by the improvement which occurred after the drainage of these cavities was established tho there was no gross pathologic change discovered.

Correction of Cicatricial Ectropion by Overlay.

DR. GEORGE H. CROSS presented a case showing the reconstruction of the left upper eyelid of a colored man by means of an epidermal overlay. The original

injury to the lid and brow was the result of the application of a caustic salve which destroyed the outer surface of the lid, the resultant scar and healing producing a complete eversion of the lid with the margin adherent to the brow.

The lid was separated along the line of attachment and, by blunt dissection, the original external surface was exposed, the lid being put on a stretch by sutures thru a piece of adhesive plaster on the cheek. A thin epidermal graft was then taken from the leg above the knee and smoothed into place, then covered with a piece of warm modeling compound and a bandage. The original dressing was removed at the end of a week and a fresh dressing kept on for two days when all treatment was discontinued. The ectropion was completely corrected and full control of the lid maintained.

Before and After Cataract.

DR. EDWIN B. MILLER stated that with the advent of insulin and the proper study and control of diabetes, these cases can be safely operated upon. In the presence of a high albuminuric content, it is safer to place the patient under a course of treatment and do the operation later.

With the presence of high blood pressure, 200 or more, there is danger of expulsive hemorrhage and protrusion of the vitreous, not only at the time of operation but also afterward.

Bad teeth and infected sinuses increase the risk, and if one wants to be on the safe side, he would better defer the operation until after these factors are eliminated.

If the pneumococcus, diphtheria bacillus, or streptococcus are present in the culture, operation is contraindicated. If a few colonies of staphylococcus or of xerosis bacillus are present, one may go ahead, but, if there are many, operation had better be postponed.

Good light perception and projection previous to operation are essential to a successful outcome.

I believe any cataract operation can be successfully performed without preliminary or postoperative drugging, as this may cause vomiting.

One should bring the patient into the hospital two or three days before operation, see that the environment is pleasant and the patient comfortable, order the usual cleansing enema, greatly restrict the diet, have the usual laboratory tests made, the toilet of the eye carried out, which consists of scrubbing the face with soap and water and instilling into the conjunctival sac a 25% solution of argyrol every four hours; two hours before the operation, instilling into the eye to be operated on 1% solution of atropin sulphate, repeating this one hour later.

All cutting instruments are placed for five minutes in carbolic acid, then passed thru the rinsing tray of sterile water, then allowed to remain in the alcohol fifteen minutes and finally placed in the fourth tray of sterile water ready for use. The noncutting instruments are boiled for fifteen minutes. The instruments to be used are placed on a sterile tray in a row in the order in which they are to be used.

The patient is prepared as follows: When coming to the operating room, the eye having been prepared according to the method outlined above, an area near the outer canthus is cleaned and painted with 2% tincture of iodine; a 1% solution of novocain is now injected at the outer canthus and while the needle is *in situ* it is slightly pulled back and pointed first to the upper and then to the lower lid. The 4% cocain solution is now instilled, one drop in the good eye and three drops every three minutes for three doses in the eye to be operated on. This is followed by three drops of 1 to 1000 adrenalin solution. This allows about ten minutes from the time of the novocain injection and we have good local anesthesia. Where we have very narrow palpebral fissure, or if the patient is very restless or we suspect fluid vitreous, it may be well to do an external canthotomy. The face around the eye is again scrubbed with green soap and water, the conjunctival sac is flushed with warm boric solution, four cotton tipped applicators wet with sterile boric solution are now used. First, one for cleansing the lashes of the upper lid; second, for cleansing the lashes of the lower

lid; third, sweeping out the upper conjunctival sac; fourth, sweeping out the lower conjunctival sac. The conjunctival sac is flushed with mercuraphen solution 1/8000, then again with warm boric acid solution.

The area around the eye is painted with 2% iodine solution, the lashes are trimmed with a straight scissors, the blades of which are coated with sterile petrolatum and the lid margins are painted with 2% iodine solution and wiped dry with a cotton tipped applicator, the eye sheet is applied and the patient is ready for operation.

When the operation is finished, the conjunctival sac is flushed with warm boric solution, 1% atropin solution and 25% argyrol solution are instilled. Both eyes are closed and one to three thousand bichlorid ointment is spread on the lids, over this is placed a Barraquer dressing, which consists of a thin sheet of cotton about the size of a half dollar and about one-eighth inch thick wet with warm sterile boric solution; this is pressed down snugly on the eyelids and the hollow space is built up with dry pledgets of cotton until it comes even with the face; over this is placed a sterile pad held down by isinglass plaster, then the aluminum eye shield is applied to the operated eye and held in place with adhesive plaster. No bandage is used. When the patient is placed in bed, definite orders are given that no drugs of any kind be administered and only liquid diet is allowed for the first forty-eight hours. This is the critical period and a special nurse should be provided; if this is not possible, the nurse on duty should look after the case very carefully.

I have discarded all drugs before and after the operation.

It is not necessary to look at the operated eye for forty-eight hours, when the eye can be opened. If it looks well, I do nothing until the next day when the eyelids are cleansed with warm boric solution, the conjunctival sac is then flushed with warm boric and 1% atropin solution instilled. If the anterior chamber is reformed, the other eye is allowed open, if not, both are closed for another day. This daily dressing is kept up for a week. The patient is warned about

stooping over as this often opens the wound and causes protrusion of the vitreous or the iris.

If prolapse of the vitreous occurs, cut off the protruding part and put on a Barraquer dressing with a gauze bandage snugly fitting. I tried to improve a case by nipping off the vitreous when it had protruded a second time but this did more harm than good. Today I leave it alone after the first cutting and do not mind a gaping wound. I instill 2% mercurochrome and replace the Barraquer dressing and tight bandage and let Nature take care of it. I have been surprised more than once how well she does this. The same is true of eversion of the flap, but this can be eliminated by the conjunctival bridge method; I have performed the last four this way, with excellent results. In my experience, the suture method does not prevent expulsive hemorrhage or prolapse of the vitreous or iris, nor does a large conjunctival flap help much after it has occurred.

On two occasions, in my earlier career, I performed cataract operations in the patient's home, in both cases I had trouble, extra work, and a lot of worry to get a fair result. Nothing could induce me to do it again. It is a bad practice, I care not how well the home is equipped.

I believe in washing out the debris in the anterior chamber with a properly constructed irrigator filled with warm saline solution but do not use instruments. One had better allow shreds of capsule and cortex to remain unless they are easily washed out, and later do a capsulotomy than try to remove them with forceps.

W. H. Bates, in a series of experiments on rabbits, found that when the anterior chamber is first opened, a clear fluid flows out which does not clot. If, however, a little later the wound is reopened, the fluid which escapes clots spontaneously. Such a clot, when strained and examined by the microscope, shows a structure of fibrin. Each time the eye is reopened, the escaping fluid clots like blood after standing for a short time. If the anterior chamber is filled with normal saline solution, it pre-

vents the formation of the fibrin containing liquid and assists in preventing after cataract.

A cataract operation is so rapidly done that neither the physician, the patient, or the hospital authorities realize the amount of preparation or skill required in its successful performance.

Discussion. DR. LUTHER C. PETER said that Dr. Miller's paper opened a broad field for discussion. He wished, however, to call attention to but one point in his paper, namely, the taking of the light projection fields in cataractous patients. Unless great care is observed that the flame of the light of the luminous ophthalmoscope, when used, is kept off the cornea, the patient and doctor may get a wrong impression of the light projection field. Great care should be observed that the light at no time is thrown directly upon the cornea. By observing this precaution, a true light projection field will be obtained. It is probable, in the examination made by Dr. Miller of the patient suffering from retinitis pigmentosa, a condition in which we should find very much contracted fields, that the light may have fallen upon the cornea, and thus given the wrong impression as to the patient's light projection.

Iridectomy from the Anatomic Standpoint.

DR. B. ALEXANDER RANDALL said that the value of iridectomy under various circumstances is too well known to need citation here; but the employment of various substitutes and modifications of the Graefe technic, points to frequent clinical shortcomings, while the anatomic study of instances where it has been performed offers valuable explanation of many of its failures. Indeed the viewpoint of the pathologic anatomist is naturally rather pessimistic, since it is almost solely the unrelieved cases that come to his cognizance; unless he shares the view of v. Rokitsansky who said one day at the Vienna Pathologic Institute, "What? no autopsies? Bad medicine."

Yet there are instances where death from accidental or intercurrent causes had brought specimens of supposedly good results under scrutiny; and as it has been my fortune to study some of these,

I venture to bring the matters before you.

My competence so to do may be questioned by many of this Section, since I am known to you in another field than Ophthalmology; yet my sectioning of dozens of eyes in the laboratories of Arlt, in Vienna, Norris and Risley here, and some from my own practice has given me an interest and, let us hope, some knowledge of the matter. Yet, rather than pretend to authoritative dicta, my purpose is to call your attention to the mass of admirable material for study here among us. In the aggregate it probably compares favorably with that which was so beautifully set before you by Fuchs a few years ago; and while we can hardly present any so qualified exponent as the Vienna Professor, we ought to have or encourage the making of competent eye pathologists among us.

The gains and losses by iris excision in cataract extraction may never be justly decided, and the specimens here shown are mainly on the debit side, since it may be claimed to have favored prolapse and incarceration of the iris rather than its prevention. Yet watching, in "simple extraction," the stretching and probable trauma of the intact iris, even where a flap incision of the corneal margin has been made, inclines one to doubt if the hemorrhage and other defect of sphincter action after iridectomy are not the lesser evils. Even in iridectomies for glaucoma, when a cystoid scar might be expected to give a better "filtration cicatrix," it is discouraging to find it quite unavailing or even, as in this case, to precipitate, after extraction, a glaucoma that had not seemed previously threatening. Scant circumlental space (Priestley Smith) can hardly be claimed as a factor in increasing the tension after the lens has been removed; and if anterior sclerotomy is often to be curative, we might justly claim at least preventative value from the smoothly healed, cataract incision. The most satisfactory clinical achievement of the operation is apt to show in subsequent anatomic study that quite a stump of iris has been left behind; enough fully to block the iris angle and impede anterior drainage. In this juvenile case we find the iris root, atrophied to a mere uveal pigment layer,

driven into Schlemm's canal; and altho the yielding sclera gave us a buphthalmic axial length of 32 mm., the nervehead was totally cupped and the posterior pole was staphylomatous, with a wide area of choroidal absorption; glaucoma compelled enucleation.

It is needless now to discuss the various details of these cases—instructive as each of them might be in our study of the many sided problem; let us hope that it may stimulate the joint investigation of the rich clinical, and especially the anatomic, material in our possession. But it seems pertinent to suggest that in every one of these operations done for the cure of glaucoma, we have the unhealed gaping of the impervious Descemet membrane and therein may be the real value of any such measure. An additional "Fontana space" is thus made for filtration, and its efficacy may depend mainly upon its extent. If so, a large anterior sclerotomy with the Graefe knife, without cutting thru the apex of the arc, may prove the most potent measure.

Dr. Richard Bright.

DR. BURTON CHANCE read a paper in appreciation of Bright's contributions to medicine referring especially to his ophthalmologic observations.

LEIGHTON F. APPLEMAN,
Clerk.

ST. LOUIS OPHTHALMIC SOCIETY.

April 29, 1927.

DR. JOHN GREEN, Presiding.

Syphilis of the Orbit.

DR. J. F. HARDESTY found that in the literature on syphilis of the orbit all references are to involvement of the osseous wall. Thus, Ball in his *Modern Ophthalmology*, states that "Gummata may attack the periosteum of the orbital bones tho much less frequently than the other cranial bones. Exostosis may occur in any portion of the orbital wall but most frequently from the os planum of the ethmoid and is usually due to syphilis." Oscar Dodd of Chicago, writing in the *Archives of Ophthalmology* in 1912, of syphilis of the orbit, reviews the literature and cites

one case of chronic syphilitic periostitis of six months' duration. He says that Birch Hirschfeld reported all cases up to 1907, a total of seventy-eight and that one case in a man, sixty-three years old, was reported after that. He classifies syphilis of the orbit into two groups: First, those in which the orbital margin is primarily affected; second, those beginning with periostitis or gumma of the orbital walls. Kemp of Baltimore in the Archives of Dermatology and Syphilis, August, 1927, volume 8, no. 2, says that syphilis of the orbit is a "rare manifestation of the disease" which was first described by Boerhaave in 1749. He says that not more than one hundred and fifty authentic cases have been reported, either congenital or acquired and that in six thousand cases of eye syphilis seen at Johns Hopkins Hospital clinic only five cases showed it. In citing cases he speaks of them as gummata or periostitis of the orbital wall. From the foregoing it is easy to see why I call syphilis of the orbit, not apparently involving the bony wall, unusual. The case reported is, in my opinion, luetic, and I give it to you for what it is worth.

I.K., aged 5 years, was first seen Jan. 15, 1926, with the history of the left eye becoming swollen two or three days before. She was still quarantined for scarlet fever. There was marked swelling of the left eye with proptosis and limitation of movements, especially adduction. Some congestion and swelling of the left disc and edema of the bulbar conjunctiva marked, without fluctuation or pointing present. Cold packs, etc., were used. On January 18, the swelling was much less and the condition was improved generally. On the 24th, the father telephoned that the swelling was worse. There was marked swelling especially above and to the nasal side, with discoloration. This was incised and much dark blood and apparently some pus escaped. On the 25th, the eye was almost back to normal position. On the 28th, the eye was again swollen and I was unable to obtain drainage by wide and deeper incision.

She was sent to Isolation Hospital. On the 31st, she was seen by Dr. George Hourn and her sinus opened. Some pus was thought to be found. No improvement followed. On February 1st, the child was very sick but temperature, etc., not in keeping with appearance. Dr. Flury, called in consultation, advised wider opening. February 2nd, general anesthetic and wide opening, much dark blood in tissue but no collection of pus found. On the 3rd, hot and cold packs were stopped and mercury inunctions begun. Phylacogen was given. She began to improve at once. On the 10th, bloody stools resulted from mercury. This was then stopped. The eye became worse. Mercury was begun again and on the 22nd she left the hospital with her eye almost normal. The family physician advised to continue specific treatment. Disc was swollen and there were a few hemorrhages. On March 4th, the mother telephoned that the eye was again swollen on awakening. Specific treatment had not been kept up. It was started again. Roentgen ray of the orbit shows nothing. On the 15th, the swelling was almost gone. April 13th, the eye was swollen again. Specific treatment had been stopped. Ear, nose and throat examination revealed nothing. The swelling went down. On May 5th, there was some swelling. May 24th, swelling was again increased. Dr. Hardesty earnestly advised increase in specific treatment. June 19th, treatment was increased and mother says there has been no trouble since. There is marked atrophy of the optic nerve. The eye is quiet. On August 25th, there had been no further trouble. Vision in the eye was doubtful but cosmetic result was excellent. On Jan. 26, 1927, one year later, the vision of the right eye was 16/20 (pictures); of the left it was doubtful light perception. Optic nerve was completely atrophic. Several roentgen ray examinations made during the course of the disease did not show any involvement of the bony structure of the orbit.

Discussion. DR. JOHN GREEN said that on one occasion he saw a small

boy nine years old with what appeared to be acute orbital cellulitis. The history given was that the child had been struck on the eyelid by a piece of chalk thrown by a playmate. The lids were swollen and shiny; the eye was proptosed and splinted. An incision released much the type of fluid Dr. Hardesty has described in his case—thin and blood stained. The exophthalmus increased. A few days later a hard mass was felt under the orbital rim. A fragment was excised and proved to be a sarcoma. Exenteration of the orbit followed by roentgen ray treatment did not prevent recurrence and death soon followed.

Periostitis of the orbit of syphilitic origin is not very rare. The few cases I have seen have yielded to large doses of potassium iodid.

Plastic Surgery of the Orbit.

DR. V. P. BLAIR gave an illustrated talk on this subject.

Discussion. DR. B. Y. ALVIS asked whether or not in a case following an enucleation one might not use dermal graft to hold the artificial eye forward where there is not any particular deformity aside from that consisting in the sinking back of the orbital tissue and allowing a sunken appearance which is so observable when a prosthesis is worn.

DR. J. W. CHARLES said that he had had the honor of presenting to this society recently a case of progressive fat atrophy. In this case there is complete loss of orbital fat. The eyes are so exposed that they sometimes have to be pasted together at night in order to protect the cornea, or else the patient wears bandages. He asked about the advisability of implanting fat or cartilage, or anything else in order to keep the globe forward against the lids, for there is a distinct air chamber between the globe and the lids and there is constant difficulty in keeping the eye clean. In one eye he had to fight against ulcer at all times. The other eye is not so bad.

DR. M. JACOBS said that he had never had the temerity to do other than to make an attempt at enlarging a socket, and asked whether in his

work Dr. Blair had occasionally found that the skin grafts implanted in the socket instead of going thru the transformation which we hoped for, frequently remain as skin. In such cases one is unable to get rid of the secretion which persists. Dr. Jacobs had done a number of these operations and had the misfortune to get the flaps too thick, with the result that in some parts of the socket there was rather definite skin. These patches seemed to be the source of a lot of secretion which nothing seemed to reduce.

DR. LAWRENCE POST said that determination of enophthalmos depends on whether one means enophthalmos as related to the orbital rim or as related to the fellow eye. If the entire orbit has been pushed backwards a restoration of the eye to its original position in respect to the other eye would cause a marked protrusion of the eye from the retrodisplaced orbit were it not possible to bring forward the orbital rim at the same time.

DR. M. H. POST said that he was fortunate in having the opportunity of seeing Major Gilles' Hospital outside of London during the war, where there was much interesting plastic surgery of the face. There were many cases which had been operated upon by placing Esser inlays and all of them appeared quite parchment like and very pale. He asked Dr. Blair whether it had been his experience that the skin from these grafts eventually recovers its natural color.

DR. F. O. SCHWARTZ said that he thought one of the big lessons to be derived from Dr. Blair's address is this: we as oculists are too prone to consider malformations strictly from the ophthalmic standpoint. We do not see them in the light of plastic surgery as we should. For instance, in treating small defects of the lid margins, we are content to freshen their margins and bring the parts together, and as a result, we do not get a perfectly normal curvature but a pronounced angle. He has seen very little building up of the lid on the part of the oculist.

DR. JOHN GREEN said that Dr. Blair's implantations of cartilage in the orbit

are interesting. His work antedates that of a young Baltimore oculist, who recently described a cartilage transplant into Tenon's capsule following enucleation.

The value of firm and long continued pressure after an implant as a means of avoiding venous stasis, coincides with his own experience. After a Frost-Lang operation, with a glass or gold ball implanted, a firm pressure bandage for seventy-two hours will obviate postoperative swelling.

DR. BLAIR, closing, said "In taking up the subject of implantation in the orbit, I will disregard the glass and gold ball, tho I know that men get good results with such balls. I have an innate prejudice against implanting a foreign substance. This may be just a foolish prejudice, but it will take some time to determine the final outcome. A friend of mine published twenty-four cases in which he had built up the nose with celluloid implants, and never lost one and as soon as he published the paper, a number of them came back on account of trouble with the implant.

The one hard filling which seems to me to be preeminently fit is cartilage. We obtain it from the lower costal arches away down on the left side, taking out more than is needed and putting some under the skin for future reference. You may want some more, and you may lose some. In taking this cartilage out, there seems to be no rule, but every now and then you will find a cartilage which on the cut surface has been eaten out so that there is a concavity. Therefore, I believe it is better to keep some perichondrium.

Transplanted cartilage is the ideal substance for filling this space because it holds its form and the tissues, including the muscles, become attached to it.

I own we were once guilty of bringing an eye forward with paraffin. I don't think a hard noninfiltrating mass of paraffin is objectionable in the sense that it might produce a parafinoma, but it is so closely related to the type which is objectionable that one hates to use it. In the later cases, we have made an incision along the

junction of the outer with the upper borders of the orbit or along the lower to get into a space into which quantities of cartilage can be inserted between the periosteum and the orbital structures. Of course, one does not want to impinge on the optic nerve or the muscles, but if there is any fat in the orbit it is practically a fluid and it is just a matter of putting in enough filler. If the palpebral fascia is intact so that the fat cannot run out in front, it will push the eye forward and you can bring it forward without hurting it. The mobility of the globe or stump can be predetermined by injecting saline. If the globe or stump comes forward with saline, it will also with cartilage or paraffin. You can regulate the size and fit in measured doses until you get enough.

Regarding fat transplantation, our observation of our own cases in the now not recent past, and observation of tissue and patients, upon whom fat or fat and fascia transplants were done by others, leads us to the belief that as a practical proposition these are not very apt to be really successful. It would appear that a mass of fat tissue has difficulty in establishing a blood supply and that the presence of such a tissue as the fascia lata is not very helpful.

It was not until Eitner of Vienna called our attention to his report of the use of fat carrying dermal grafts that we had what looks like a key to this subject. - A properly applied full thickness skin graft will obtain an abundant blood supply within 48 hours that will properly nourish the epithelium and the latter tissue is very sensitive to prolonged curtailment of circulation. If the epithelium instead of the fat is removed from the derma and the derma buried with a mass of attached fat, then this fat appears to take on blood supply as easily as does the skin graft. It is our belief that resumption of the blood supply is at least facilitated by keeping the sheet derma on normal lateral tension. It might be difficult to do this deep in the orbit where the globe or stump and muscles are still present. As to the point Dr. Charles brought out, I think

with care one might slide above the levator palpebrae muscle and put in a sheet of fat bearing derma and still keep up a tension and fill those sockets. The eviscerated orbit is another matter. Here the dermal fat graft or the fat bearing flap is surgically applicable.

Cartilage as a substance can be planted into the orbit whether there has been a recent enucleation or within the stump of an old enucleation along the wall where you have the tendon intact. I don't think we have anything better than cartilage provided there is a suitable bed to receive and nourish it. In recent fractures, the depressed floor of the orbit should be elevated, but where this has not been done, the depressed globe can be somewhat accurately elevated by inserting cartilage strips along the floor of the orbit.

Outward displacement of the inner canthus from trauma is another problem. We have found it very difficult to reestablish a proper mesial palpebral ligament without carrying the inner canthus somewhat forward.

Paraffinoma about the orbit is a serious and often a most distressing problem. We have seen it result from oil injection into the lacrimal sac and into the frontal sinus, but most frequently from ill advised "Beauty operations." The former cases were distressing both to the surgeon and the patient, but in the latter the offender has usually, like the cuckoo, stepped out of the situation before the mischief is fully evident. In any case, there is little to do but dig out the infiltrated tissues and make the best possible repair. The "beauty" cases may be particularly difficult to deal with, for not being satisfied with a more or less average face originally, they are less likely to be pleased with the worse condition that is apt to result after removal of the damaged tissue.

It was a practical point Dr. Post mentioned. If the outer border of the orbit is driven backwards, even tho it does go downwards and the globe has gone with it, you have not a very noticeable enophthalmus, but the enophthalmus is there and you have lost the

full pulley action of the levator palpebrae muscle over the globe and the upper lid will not rise to the normal extent. I think you can get a better result by disregarding the fact that the relation of the eye and external orbit is correct and bringing forward the globe and building up the orbital border, because then you have the action of the levator palpebrae restored.

Maybe I have not watched our skin grafts in the conjunctival sac sufficiently closely. When I am thru I turn it over to an oculist and let him worry. Some get a greasy discharge, sometimes a little purulent, but daily cleaning and a well fitting eye seem to help.

DR. JACOBS asked if he would advise removing those flaps and putting in others.

DR. BLAIR answered that he would hate to do it, but possibly a thinner graft would give less trouble in this way than the thicker one, but the thin graft would contract more.

CHARLES W. TOOKER,
Secretary.

MINNESOTA ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY.

Section of Ophthalmology.

March 11, 1927.

DR. JOHN H. SHELLMAN, President.

Warty Growth of the Lids.

DR. PAUL BERRISFORD presented a man, aged 29 years, who has always been well excepting for childhood diseases and scarlet fever when a youth. The patient states that there has been a small growth in the internal angle of the eye since birth. Not until 1921 did this growth appear to increase in size. Since that time there has been a gradual increase in size and extent of the growth along both the upper and lower lid margins, particularly in the former, until now the upper lid at the site of the growth overlaps the lower lid. This causes a narrowing of the palpebral fissure and as a result, when the eyes are turned to the opposite side, there is a limitation of vision on the nasal side of the affected eye.

Five years ago the patient consulted his family physician at the Swedish Hospital for radium treatments. Two applications were given a week apart, and later during the summer three more applications were given. The patient states that the treatment had no influence on the growth. The growth has now reached such a size that the patient has become worried concerning his condition.

The patient complains of little. The growth is matted together in the morning by crustings. At times, especially in the wind, the eye waters. There is no history of venereal infection or family history of tuberculosis.

Description of the growth: The right upper lid border, beginning at the internal canthus and extending temporally for a distance of 15 mm., shows a warty growth, nodular in appearance and fairly firm to touch. Here and there are areas of bluish black pigmentation. The maximum thickness of the growth is at the punctum lacrimale and gradually tapers off as it extends temporally. The growth involves the whole thickness of the lid, and is wedgelike in extent with the apex directed temporally. Its tarsal surface appears granular, raised, and bleeds easily if rubbed with gauze. The skin surface shows the cilia arising from it, but extends beyond the normal lower tarsal edge so that the upper lid at this point overlaps the lower.

The right lower lid border shows a similar growth beginning at the inner canthus and extending temporally for a distance of about 10 mm. It has not the warty appearance above described, but appears granular. It, too, has a wedgelike distribution with the apex outward. Its point of maximum thickness is at the punctum lacrimale and involves the whole thickness of the lid.

Irrigation thru the punctum of the lower lid shows the canalis lacrimalis

and nasofrontal duct patent. Irrigation thru the upper punctum lacrimale proves a fistula of the canalis lacrimale present for the fluid appeared at one point on the skin surface of the warty growth. A communication between the canalis lacrimale and the nasolacrimal duct could not be established.

Discussion. DR. GEO. C. DITTMAN stated that he would not venture a diagnosis offhand, but he wished to suggest, if it had not already been tried, the attempt at fulguration or desiccation, which he felt would produce a very nice looking scar. He had shown a case at the last clinical meeting in St. Paul of an epithelioma in an elderly man. After the high frequency treatment a beautiful scar resulted, with no noticeable loss of tissue.

DR. CARL WALDRON stated that this patient had had such prolonged observation that one need not fear any bad results from cutting into the tumor as it must be a benign affair. He stated that medical men are coming more and more to realize that there are a great many tumors that cannot be diagnosed short of one's vision thru the microscope and he thought the removal of some of this tissue for biopsy might be of great aid; also this procedure would not preclude the use of fulguration or radium.

DR. BERRISFORD stated that, having seen the case for the first time but two days ago, not sufficient time was allowed for a complete study of it from an etiologic standpoint. However, this gave the members of the Academy the opportunity to inspect the growth in its true picture. He hoped to give the Academy the report of the biopsy at the next meeting. The method of treatment to be employed would depend largely upon the causative factor in the production of the growth.

W. E. CAMP,
Recorder.

THE INTERNATIONAL OPHTHALMOLOGICAL COUNCIL.

The first list of subscribers to the support of the International Ophthalmological Council indicates by the pledges already gathered, that the Council, as well as the International Congress in 1929 at Amsterdam, will have the support of the leading ophthalmologists in the different countries. The British and American members of the Conference at Scheveningen, Mr. Treacher Collins, Mr. Leslie Paton, Dr. George E. de Schweinitz and Dr. Walter R. Parker promptly called the attention of their colleagues to the Council (pp. 701 and 788) and its needs; and this accounts for the early response from Great Britain, the United States of America and Canada. The support of national organizations indicates the wider interest already awakened.

The following have subscribed to the funds of the Council:

The Danish Ophthalmological Society, the German Ophthalmological Society, the Hungarian Ophthalmological Society, the Montreal Ophthalmological Society and the British Journal of Ophthalmology.

Canada: W. Gordon M. Byers, Richard Kerry, Kenneth B. Johnson, A. G. McAuley, J. A. MacMillan, J. Rosenbaum, Fred. Tooke.

Denmark: Chr. F. Bentzen, K. K. K. Lundsgaard.

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DETACHMENT OF THE RETINA.

This is a condition that bristles with important questions, which we often find difficult and sometimes impossible to answer. When the ophthalmoscope shows the retina apparently in advance of its normal position, and floating on fluid that separates it from the pigment layer on which it should rest, the first question must be: Is the retina really detached? The pictures of detached retina are quite different from the pictures of other pathologic conditions, as shown in the atlases of ophthalmoscopy; but in the eye the variations presented may be confusing. The writer has seen in consultation numerous cases of supposed detachment of the retina, where the retina was not detached; and the mistake has been made by colleagues of much experience, who were careful observers.

In high myopia the diagnosis has been based on seeing clearly retinal vessels with a weak concave or even a convex lens; overlooking the fact that even in the highest myopia the periphery of the retina is always in advance of the principal focus of the dioptric media of the eye. Looking obliquely into the eye, as one always does to see the periphery of the retina, where a limited detachment is most frequently located, the retinal vessels may always be focussed with

stronger convex or weaker concave lenses, than are required to focus the region about the optic disc and macula.

In some eyes having 10 or 12 D. of myopia, peripheral vessels may be clearly focussed without any lens, or with a convex lens. When the attempt is made to see them thru an undilated pupil, in an eye that is often moved, a false impression that the retina is detached may be very easily gotten, and be confirmed by repeated glimpses obtained under similar conditions. The real state of affairs may be only revealed by prolonged study thru a dilated pupil. Then it will generally be easy to see that choroidal vessels and pigment details are also within the principal focus of the media, and can be seen with a convex lens or without any.

The problem is yet more difficult when the retina is swollen and hazy. Here the vessels may actually be pushed forward, while details of the pigment layer and choroid cannot be seen for purposes of comparison. Retinitis with swelling and detachment may coexist. But of the cases reported as of this character, especially among those associated with the toxemia of pregnancy, it seems doubtful if some were really cases of detachment. Exudative retinitis, Coats' disease and angiomas are marked by swelling and occasional detachment in combinations that may be very puzzling.

Opacities in the vitreous have also been mistaken for retinal detachment, when they were localized close to the periphery of the visible retina, where the retinal vessels are small and not easy to discover at best. The appearances often relied on to show beginning detachment are suggestive of it, rather than conclusive. Only repeated observations, extended over many days, or weeks, may be able to settle the question as to whether the retina has really been detached. And this is also true of rare cases of pushing forward of the retina by limited choroidal swellings.

When it is certainly determined that retinal detachment is present, the diagnosis is far from complete. Prognosis and the proper treatment of the case will generally rest on our knowledge of the cause of the detachment. The case history may be helpful, but it may be misleading. Myopia may be present and yet the detachment be due to trauma. The injury causing it may have occurred some weeks before impairment of vision was noticed, or the eye examined with the ophthalmoscope, and be so completely forgotten, that careful questioning fails to bring any recollection of it. Or the history volunteered of an injury had nothing to do with the detachment.

A choroidal tumor within the ophthalmoscopic field often becomes concealed, by the retina pushed forward from it by fluid. The original, slowly progressive, loss from the visual field may not have been noticed; and its beginning be dated from the rapid increase of the defect, due to extension of the detachment by fluid. In such a case, the use of strong, direct sunlight, for the ophthalmoscopic examination, can show the tumor thru the detachment. Transillumination may show a tumor anterior to the equator of the eyeball, but fails to give evidence of one situated near the posterior pole. A detachment may be sharply limited and remain in a certain position, and yet be due to the spontaneous accumulation of fluid. A young man with such a detachment is known to have lived for many years afterward, with permanent defect of the visual field, but without any evidence of tumor growth, or increased intraocular tension.

Increased tension has been noted in cases where, by examination of the eyeball after enucleation, the detachment was proved not to be due to tumor. Sometimes subnormal tension has been observed in cases where the detachment was due to choroidal tumor. In retinal detachment there is no single symptom that can be relied on to reveal the character of the case. Even in typical cases of myopic, traumatic, spontaneous, or tumor detachment, the connection of the primary cause with the detachment is so poorly understood, that the most careful clinical study, and weighing of all evidence obtainable may leave uncertainty, until operative interference, or the lapse of time has produced additional evidence. A probable diagnosis should be made as soon as possible. But in these cases, as in others, the diagnosis should be held ever subject to revision, when new light can be obtained upon the case.

E. J.

OCULAR FATIGUE IN AVIATION.

The epochal flights of American Transoceanic Aviators, the air activities necessitated by the National Defense and the commercial possibilities of Aviation, as exemplified by the Air Mail, have focussed attention upon transportation of men and material by the air. The newspapers and other popular publications are full of this subject, and the technical magazines have many pages devoted to the mechanics of flying.

The eyes of our youth are turned towards the air as a vocation, but few of them can be allowed to get there, for the profession of an aviator requires not only peculiar fitness of mind and a rigid training, but has a responsibility for life and property that has no parallel in other forms of human activity. Not all men can fly, not alone as pilots, observers or mechanics, but also there are many, otherwise seemingly healthy persons who should be estopped from aerial navigation, by reason of their physical unfitness for high altitudes.

There is a new medical specialty arising from this new mode of human progression, necessitated by selection of men who should fly, and for the elimination of the unfit: The "Flight Surgeon"—A

medical man who has had exhaustive training for this purpose in neuropsychiatry, physical examination, especially of the heart and head, and above all in ophthalmology, for the aviator must see well to fly safely.

It is we, the medical men, who are primarily the deciding factors in the selection and maintenance of the fitness of aviators; for careful selection of candidates, by the exhaustive physical examination, allows only safe men to train, thereby eliminating the main causes of crashes with their resultant loss of life and property. It costs several thousands of dollars to train an aviator properly, and *ipse facto*, there is no use wasting the time and money on personnel that would have to be eliminated later.

One of the factors in the causation of aviation accidents is ocular fatigue, particularly that of convergence and accommodation. A very excellent article on this subject was that by Conrad Berens, L. H. Hardy and H. F. Pierce, published in the Edward Jackson Memorial volume, "Contributions to Ophthalmic Science" in 1926, now reprinted in the Military Surgeon for August 1927. Fatigue of convergence is a cause of aviation crashes, injury and death, to the aviator and his passengers, and an economic damage of no small amount in the loss of the plane, and a waste of the expensive training of the pilot. While it is only one factor it must be considered and measured.

Howe of Buffalo, in 1913, first devised a method of recording fatigue of convergence graphically; an ergograph with an attachment of rotary prisms. It proved of real value in studying fatigue of convergence of aviators, as affected by low oxygen tension produced by the Henderson-Price rebreathing apparatus and in the Pierce low pressure chamber, which reproduce conditions as met with in thin air at high altitudes, which affect not only the breathing, but all the bodily functions and special senses of the aviator as well as his mentality.

The authors desired a simpler apparatus which records both fatigue of convergence and fatigue of accommodation, which is not only useful for aviator personnel examinations, but which shows up

types of asthenopia associated with convergence difficulties and is of value in diagnosing and treating certain types of ocular fatigue, as an adjunct to the equipment of the ophthalmologist in private practice.

H. V. W.

THE OPHTHALMIC YEAR BOOK

What lives must die. This keeps the world clear for new life. Death brings some loss but most new forms of life are gain. This we hope will be true of the passing of the Ophthalmic Year Book. Some feel the loss; but in the end more may know a gain. Those who have worked to prepare and publish the Year Book, have understood it best and found it more useful, and they have experienced the development that work of this kind brings. The wider knowledge of ophthalmology so gained remains to them, and the 23 volumes published will still help them in further study. Others who have most regularly read these volumes will still have them for reference, and have the habits of selection, comparison and judgment, that will serve them in dealing with any form of ophthalmic literature that may follow.

It is safe to assume that, in so far as the Year Book has been really useful, something will follow it to take its place. This Journal is in a way a successor to the Year Book, as it is a successor to the other journals that ceased publication when it was started. It already has a wider circle of interested readers than the Year Book ever had and relief from the expense of publishing the Year Book makes possible improvements in the Journal, that are certain to increase its value. The immediately visible changes in the Journal, that will make it more attractive and more valuable, will begin to appear in the January number of the new volume. But only when readers have become accustomed to them and learned to use them, will their full importance be understood. New features that have been thought desirable can be started and developed into their most serviceable form. Labor heretofore divided between the Year Book and Journal can now be concentrated on the Journal.

The editorial notice to readers of the Journal (p. 544) and the post-card ap-

peal sent out by the joint committee of the national ophthalmic organizations in July last, brought a response from only one-tenth of those who have been regularly receiving the Year Book. Among these only a minority promised to contribute to its future independent support and continuance, an aggregate amount quite insufficient for the purpose. Further report from this Committee, with suggestions for the future may be expected at the annual meetings of the national organizations. But it was made evident to the Directors of the Ophthalmic Publishing Company, that the journal was being used and appreciated by a wider circle of readers than the Year Book and that the improvement of the former would be a more important service to ophthalmologists than the continuance of the latter, and this view determined their policy.

It is also not unlikely that the suspension of the Year Book may stimulate the development of some independent enterprise, to fill the gap and meet the need thus left evident. Time will show the importance of the reasons for such a policy. The Journal will give any assistance it can to the dissemination and support of such promising suggestions as may be offered, and seem suited to the situation and the needs of English speaking ophthalmologists. E. J.

BOOK NOTICES.

The Extraocular Muscles. Luther C. Peter, A.M., M.D., Sc.D., Philadelphia. Cloth, Octavo, 294 pages, 98 engravings and 5 colored plates. Philadelphia: Lea and Febiger. 1927.

This is "a clinical study of normal and abnormal ocular motility," as the subtitle of the book explains. It is to be regretted that common use of the expression "ocular muscles" seems to justify placing on the title page a name that needs explaining. Ocular movements, normal and abnormal, are what the writer deals with. The extraocular muscles are all the muscles in the body, except those of the intraocular vessels and the uveal tract. Yet every reader will know that the term is here intended to refer to six small muscles situated in the orbit which strictly speaking might be

called circumocular, and that these movements vary not because of anything discoverable in the muscles, but because of differences in their attachment, innervations and central control, quite outside of the muscles.

It is to be noted that this book tends to lead the reader's thought beyond the narrow view of the subject, due to fixing the attention on the muscles. They are only the apparatus for executing ocular movements. The essential nerve actions and coordinations that control these movements have been rather neglected, overlooked and ignored. How much the book goes beyond the limitations of its title is shown by the four page list of its contents.

Part I, 70 pages, deals with Anatomy and Physiology. Part II, 81 pages, Heterophoria. Part III, 52 pages, Heterotropia or Concomitant Squint. Part IV, 59 pages, Paralytic Squint. Part V, 5 pages, Nystagmus or Talantropia. But in Part I, of the 30 pages devoted to anatomy, only one-third deals with the muscles, the remainder describing the bony orbit, its fascia, blood supply and nerves. The physiology considered is the general physiology of ocular movements, their associations and nerve control.

The dedication of the book is "To my students, past and present, who have inspired the writing of these pages." The object in view has been "to attempt to crystallize, and at the same time to simplify, accepted facts so as to render the course in ocular muscles interesting and practical." The "fusion faculty" receives large recognition in the parts on physiology, heterophoria and concomitant squint. Two of the color plates show the relations of various structures in the orbit, the others explain the various forms of diplopia. The illustrations are well drawn and clearly printed. They show the anatomic relations of parts, the instruments described, models to illustrate the eye movements, diagrams for fusion training and a few of the operative procedures recommended.

On the whole this book will take an important place among the treatises on ocular movements and their training and correction. It will be particularly serviceable to those who are entering upon the study of its subject. E. J.

Cistotomia Peripupillare perla Cura delle Cataratta Secondaria. Prof. Francesco Falchi. Paper, 8vo., 87 pages, 19 ill. on 3 pl. Pavia, Tipografia Cooperation, 1926.

The operation for secondary cataract as worked out by Falchi, is described in the monograph, and made so clear by the illustrations, that one who has a scant acquaintance with the Italian language can understand it. The cystitome used must have a sharp needle point, perpendicular to the slender shank, which is bent at an angle of about 40 degrees, 12 millimeters from the point.

After dilating the pupil with scopolamin or atropin, an incision 4 or 5 mm. long is made in the upper outer quadrant of the limbus. Thru this the cystitome is introduced, the point made to pierce the capsule at the edge of the pupil and carried around parallel to the pupillary margin until only the part next to the limbal incision is left undivided. Fine forceps are then thrust thru the limbal opening and the tongue of capsule seized and drawn out to be excised with scissors. This leaves the pupil clear of membrane except at its extreme periphery, where the membranous remains are hidden when the pupil is contracted.

The results obtained by this operation are illustrated by outline notes of 79 cases. It appears particularly well adapted for removing membranes of generally uniform moderate thickness. The form of the incision in the capsule is nearly a circle in a round pupil, but is modified to utilize a large part of the pupillary space, where there has been a full iridectomy. The monograph is a valuable addition to ophthalmic literature.

E. J.

Methods of Determining the Intraocular Pressure. Erich Seidel. 50 pages, paper, 20 illustrations.

Methods of Investigating the Intraocular Metabolism. Erich Seidel. 134 pages, paper, 24 illustrations and 7 colored plates.

Technic of Determining Extramacular Vision. H. Lauber. 48 pages, paper, 13 illustrations.

The above compose Lieferung 239 of Abt. V, Teil 6, Heft 7 of Abderhalden's

Handbuch der biologischen Arbeitsmethoden, and are bound together in paper. Published by Urban and Schwartzberg. Berlin and Vienna, 1927, Price 15 M.

The determining of the intraocular pressure is discussed under the heads of (A) Manometry, and (B) Tonometry. The difference between the two methods, and value and disadvantages of each and the various forms of apparatus used are described and illustrated.

The question of the intraocular metabolism is discussed under 7 heads: I. The Blood Pressure in the Ocular Vessels; II. Intraocular Blood Pressure, Osmotic Pressure of the Blood Colloids, Osmotic Action of the Ciliary Epithelium as the Driving Force for the Fluid Metabolism in the Eye; III. Methods of Determining the Flow and Exit of the Intraocular Fluid; IV. Methods of Determining the Physiologic Production of the Fluid. The Ciliary Processes or the Ciliary Epithelial Layer as an Intraocular Organ of Secretion; V. Methods of Determining the Mechanism of the Aqueous Replacement after Emptying of the Anterior Chamber; VI. The Fate of Very Small Particles of Stains Injected into the Anterior Chamber as Proof of Hamburger's Claim of a Physiologic Pupil Obstruction; VII. Methods of Demonstrating the Physical Permeability of the Walls of the Eye: Its Importance in the Study of Intraocular Pressure and Glaucoma. This also is well illustrated with pictures of apparatus and microscopic sections, many of the latter being colored.

Lauber discusses his subject under 9 heads: I. The Examination of the Visual Acuity of the Extramacular Retina; II. Determination of the Extent of the Visual Field (Perimetry, Campimetry); III. Color Perimetry; IV. Investigation of Fatigue and Psychic Field Disturbances; V. Examination of the Field when Central Fixation is Absent; VI. Investigation of the Light Sense of the Peripheral Parts of the Retina; VII. Investigation of the Color Sense of the Peripheral Parts of the Retina; VIII. Fusion Frequency; IX. Methods of Determining the Visual Field.

This part also is well illustrated with pictures of apparatus and charts.

In all of the above there are numerous footnote references, but all lack index

and table of contents. This will probably be supplied in some later *Lieferung*; but in the meantime lack of them decreases the value of these otherwise admirable exposition of these subjects.

C. L.

Atlas of the Histology of the Eye.

Part II, by Adalbert Fuchs. Cloth binding of 32 colored plates (108 illustrations) with a paper insert 77 pages. Franz Deuticke, Leipzig and Vienna, 1927.

This book follows the plan of Part I, previously reviewed in this Journal (see p. 402, v. 7, 1924), of numerous colored plates illustrating various ocular histopathologic conditions with a separately bound descriptive text. There is a wide range of conditions illustrated, practically every tissue of the eye and lids, as well as the lacrimal sac having one or more lesions pictured. Anyone having the first part should certainly obtain this book, and those not so fortunate would do well to acquire the present one at least.

C. L.

Nasal Neurology, Headaches and Eye Disorders. Greenfield Sluder, M.D., F.A.C.S., Director Dept. Otolaryngology, Washington University, St. Louis. Cloth, 8vo., 428 pages, 167 illustrations, 2 colored plates. St. Louis: C. V. Mosby Co., 1927.

The title for this monograph was chosen to attract the attention of neurologists, internists and ophthalmologists "to secure clinical cooperation in obscure neurologic cases and in order to obtain postmortem material in which the life history of the individual is definitely known." Sluder brought his views before the American Ophthalmological Society in 1900; and his monograph setting them forth in detail was published in 1918. "Special emphasis has been laid upon the neurologic side of rhinology and the special part played by the involuntary nervous system, which is superficial in the nose and nowhere else in the body."

The interest of the book to ophthalmologists is obvious; and parts like "an antrum technic heretofore unpublished"

will not be dwelt on here. Chapter I, containing 8 pages, referring to some points in the minute pathologic anatomy, is written by Johnathan Wright. Chapter II, 6 pages, is on The Nose, A General Consideration. Chapter III, 37 pages, Vacuum Frontal Headaches with Eye Symptoms Only, considers the work of Sluder and Ewing and includes details of the anatomy of the middle meatus. Chapter IV, 6 pages, is on Anterior Ethmoidal (Nasociliary, Quain) Neuralgia. Chapter V, 65 pages, deals with the Syndrome of Nasal (Sphenopalatine—Meckel's) Ganglion Neurosis. Chapter VI, 132 pages, treats of Hyperplastic Sphenoiditis and its Clinical Relations to the Optic, Oculomotor, Trochlear Trigemini, Abducens and Vidian Nerves, and Nasal Ganglion. Chapter VII, 32 pages, discusses Some Neurologic Problems in Rhinology. Chapter VIII, 8 pages, gives the Surgery of the Maxillary Antrum including "The Author's Antrum Operation." Chapter IX, 14 pages, is devoted to Orbital Abscess, and Chapter X, 83 pages, gives 113 outline case histories. Then follow 12 pages of references.

This volume presents the individual work of its author to an extent rarely seen in systemic treatises; altho, as he points out, he has drawn on the work of his contemporaries, especially J. P. Schaeffer, A. E. Ewing, L. E. White and Hajek. This work is summarized here, as is indicated by the references to 50 of Sluder's papers. It is work of importance and value. How great is its relative value can hardly be determined until another generation can give it a proper historical perspective. The price of the book seems to illustrate the recent enormous increase in the cost of printing. But it should be noted that a large part of its cost is due to the large number of illustrations, many of which are half-tone reproductions of wash sketches of dissections and operations. The color plates show the relations of different nerve tracts. The ophthalmologist who would keep informed of what is going on in other fields of medicine, closely related to his own, must make himself familiar with the work here set forth.

E. J.

West-Polyak'schen Endonasalen Tränensackoperation. Earl Kofler and Josef Urbanek. Paper Octavo, 65 pages, 13 illustrations. Berlin S. Karger, 1927.

This monograph on the simplification and improvement of the West-Polyak intranasal operation on the lacrimal sac comes from Prof. Meller's University Eye Clinic in Vienna. It gives a good account of the anatomy of the structures involved and a detailed explanation of the necessary steps in this operation, well illustrated by sketches of the parts.

Reports of 30 cases are given illustrating the application of this operation and supporting the claim for its value and relative superiority in the treatment of chronic dacryocystitis. E. J.

Annual Report, 1923, Ophthalmic Section Department of Public Health Egypt. Paper, quarto, 30 pages, Cairo Government Press, 1927.

This gives statistics of patients, diseases and expenses at the 23 ophthalmic hospitals under the direction of this department. There are also statistics of ophthalmic treatment given in the schools in 7571 cases of conjunctival disease. The number of new patients in the hospitals was 156,837 on whom were done 82,466 operations, increases of 17 percent during the year. There were 3016 cases of glaucoma on which were done 503 iridectomies and 643 trephinations. There were 2101 cases of cataract on which were done 1814 operations. E. J.

Sight Saving Classes in the Public Schools. Hazel C. Hadley, Director of Special classes. Paper, 12 mo., 90 p., 5 ill. 1927 Columbus, Ohio, F. J. Heer Printing Co.

The ophthalmologist is likely to be asked for information about sight saving classes and should be able to give it. This presentation of the Ohio Plan will inform him about aspects of the subject to which he has given little or no attention and thus make him a competent and trusted advisor in regard to a movement in conservation of the public health that is rapidly growing in importance.

Sight saving classes opened in Boston in 1913 and in Cleveland in September of the same year. Now there are in Cleve-

land 19 such classes with 54 in Ohio, in which are enrolled about 700 pupils. Such development of the classes will soon occur in other states, following the striking development of such classes that has occurred in Great Britain and other countries in Europe.

The different chapters in this report dealt with are: I General Description of a Sight Saving Class. II Aims and Procedure. III Teacher Training and Supervision. IV Survey of Sight Saving Classes. V Rural Work. VI Financial Support. VII Special Studies. VIII Sight Saving Class Reports. The Appendix takes up Legislation, Prescribed Standards and a Directory.

In the main the questions dealt with are of primary interest to teachers and school authorities. But the success of the movement to check the progress of a large number of children toward seriously defective vision and blindness must depend on the guidance and assistance of those who have first hand practical acquaintance and full appreciation of the hygiene and pathology of the eye and organs cooperating in vision. Oculists must be actively interested in the selection of pupils for such classes, the diagnosis of conditions that make such classes important; the conditions, optical and other, under which such teaching should be carried on, and the discrimination between those who can safely do school work in ordinary classes, those who should be taught in sight saving classes and those who should receive the training for the blind. With such an important educational movement in this period of rapid change and development, teachers and oculists are fortunate in having such a rational, well balanced statement of the problems they have to face. E. J.

The Cause and Cure of Speech Disorders. James S. Greene, M.D., and Emilie J. Wells, B.A. Cloth, 458 pages. Published by the Macmillan Company, New York, 1927.

While not of any great importance to the oculist, the subject of stammering and stuttering interests greatly those who practice laryngology. This work profusely illustrated gives a lengthy discussion of the subject, and describes a

method of correcting these disorders of speech. The part devoted to speech improvement, articulation, enunciation and pronunciation could be studied with profit by any one who desires to correct his own bad habits of slurring speech, etc. This part could well be used as a text book in our public schools in the training of children to speak correct English. C. L.

Potassium and Tartrates by Ralph W. Webster, Ph.D., M.D. Cloth, 168 pages. Published by the Commonwealth Press, Chicago. Price \$2.50.

This book consists of a collection by W. A. Brennon of abstracts from the literature dealing with the physiologic and toxic effects of potassium and the tartrates, with a general discussion of the subject based upon them by Dr. Webster, together with his conclusions. The tartrates have practically no importance for the ophthalmologists, but the fact that the salts of potassium are used in ocular therapeutics, makes the subject of importance to us. C. L.

Diseases of the Skin and Syphilis. Albert Strickler. Octavo, 689 pp. with 218 illustrations, 6 full page plates, some in colors.

As a practical text book for the general practitioner this treatise on cutaneous diseases and the skin lesions of syphilis, has not been equaled by any other, whether a compend or an exhaustive work of several volumes. It presents the clinical facts on the basis of pathology with the therapeutic means deduced from the pathologic and clinical findings in such a manner that the reader learns the cause of skin lesions and the reasons for each item of the recommended treatment. The basic principles of cutaneous pathology and general pathology are markedly similar. The

phenomena characterizing inflammations of the internal viscera are also characteristic of the same process occurring in the skin, the differences being due to the peculiar histology of the skin and to the unique relation between bacteria and the skin surface. Many of the organisms found on the surface of the skin belong to the nonpathologic variety, others are productive of morbid changes. The remedial measures are topical applications, general dietetic, and internal remedies, and newly the effects produced by vaccines, and electrical agents as the X-ray, radium, phototherapy, and by heat and cold, the latter by solidified carbon dioxide, etc. The reader is impressed with the simplicity of description and with the relatively small number of chemical agents and drugs used in prescriptions; when more than one ingredient is compounded the reasons for each is usually given.

In the discussion of syphilis, while the principal descriptions are of the dermatoses, the main therapeutic effort is directed towards elimination of the spirochetes and the concomitant subsidiary lesions produced by local infection by other microorganisms. But it is here shown that the skin lesions are primarily and actually due to the massive collection of spirochetes in situ, and to the efforts of the body, however ineffectual, to wall off the advancing infections.

While we ophthalmologists do not practice below the neck, yet it is necessary for us to look below the collar, to make complete physical examinations in order to establish a diagnosis and recommend appropriate treatment. Hence from time to time it is the policy of our review department to furnish information regarding new books dealing with general and the other special branches of medicine. *Hinc illa scripta!*

H. V. W.

CORRESPONDENCE.

THE LENS IN ACCOMMODATION.

Two papers have appeared this year in regard to the subject of accommodation. The one of Dr. Luedde appeared in this journal in January, and had been read before the Chicago Ophthalmological Society. The second was in the preessional volume of the ophthalmic section of the A. M. A. by Dr. McReynolds, which communication embraces also some other topics. As to the subject of accommodation it seems that both papers may be considered together.

In the discussion of human accommodation emphasis is often laid on the side of comparative anatomy, which has unduly befogged the subject.

The chronologic side has been neglected. Luedde stops short with the last communication of Tscherning in 1909 (with the exception of Henderson's paper); and McReynolds adds one name to the list of serious investigators of the problem, A. Gullstrand. He quotes him from the translation of the first volume of Helmholtz' *Physiologic Optics*, which appeared in 1925, but was really written before 1909, the year in which it appeared in Germany.

Since that some investigations of C. v. Hess were published, and Gullstrand published his *"Einfuehrung in die Methoden der Dioptrik des Auges des Menschen"*, 1911, which is a separate edition of the addendum in vol. 1 of Helmholtz, with some new material. In 1911 Gullstrand got the Nobel prize, chiefly on account of this work on the human accommodation, as is stated with the publication of his paper in the *Arch. f. Augenhk.* 1912, vol. 72.

For the understanding of this problem it is necessary to consult the above publications.

It will then be seen that McReynolds has misrepresented Gullstrand. He has taken at random some sentences from a chapter which contains 35 large printed pages (the entire addendum of Gullstrand is more than two-thirds of the size of Helmholtz' work). The trend of McReynolds argumentation goes to accept Tscherning's theory ("on revient

toujours à son premier amour") and here he meets Luedde.

It is unpardonable to neglect Gullstrand's writings. It is no argument to say, that one does not comprehend Helmholtz' theory.

We should move forward and not remain stationary in the time of Helmholtz. We know something more of the ocular anatomy, especially of the suspensory ligament and vitreous body. The vitreous body presents as a jelly, the anatomic units the ultramicroscopic fiber. Probably there exists a capillary space between lens and fossa patellaris. How a few aberrant fibers of the suspensory ligament can pull on such a tissue is for me inconceivable.

One should with caution quote the translation and in case of doubt consult the original. As example, the first sentence in McReynolds' quotation is referred to. The translation should be: "There have been plenty of researches on these subjects. The results of these pertaining to the forward displacement of the anterior part of the lens and the change of curvature of the anterior lens surface may be considered as quite reliable."

It has been deplored by many that the problem of accommodation has degenerated into personal attacks. Luedde also refers to this, but he could not abstain from the term "the slottering of the lens. the only thing Hess did," in a manner very derogatory to Hess. Now it happens that this demonstration of the movability of the lens under maximal contraction of the ciliary muscle is one of the sheet anchors of the so-called Helmholtz' theory. Would it perhaps not be better to speak of the relaxation theory, in contradistinction to the pressure theory?

Even Tscherning could not get away from it, and in the book: "Hermann v. Helmholtz et la théorie de l'accommodation," 1909, a book of false pathos and misplaced humility, not much more than a pamphlet with a scientific coating to refute Hess, 67 pages appear before "la moindre petite note sur le tremblement du cristallin sous l'influence de l'eserine" without naming the discoverer and then, on p. 86, Tscherning accuses Hess of

stealing his thunder: "le professeur Hess s'empara de l'observation par suite d'une série d'expériences, d'ailleurs bien conduites j'ai vérifié ces observations."

Read what Gullstrand thinks of this; he also refers to Tscherning on this question. "A strictly scientific explanation and definite solution of this problem was given first by Hess."

The great personal contribution of Gullstrand is his demonstration of the intracapsular accommodation. He came to a conclusion, based on computation which needed higher mathematics (equations of the 4th degree), which agrees entirely with the anatomic structure of the lens. Gullstrand states distinctly that the lens proper has no elasticity; the lens fibers are able to change place when the tension of the lens capsule (chiefly the anterior part) becomes less. Pressure on the core is excluded. The anterior lens capsule moves slightly inward at the place of the largest isodiametric circle. A diminution of the radius of the anterior lens pole from 10 to 6 mm. means a displacement forward of 0.4 mm.

Gullstrand explains the process by a certain balance between the elastic force of the lens capsule which is held in check by the suspensory lig. On accommodation the ciliary muscle contracts and by pulling the choroid forward these suspensory fibers (chiefly those coming from behind) near their points of origin and adhesion and thereby give the anterior lens capsule chance to take a more globular form, in which the form and consistency of the lens help. The stretched choroid is again a force, which, when released will bring the choroid in its

original place and the suspensory fibers to their original tension. Gullstrand considers it to be one of the most beautiful physiologic processes ("moreover, taking into consideration that there are no known facts which could in any way refute this mechanism [namely that of accommodation] it is doubtful whether there is a more complete chain of proof in all the medical sciences").

It is wonderful that this experiment of Hess has not become one of the routine experiments in all courses of physiologic optics. Besides, every one of us should try to see the trembling of the iris on maximal accommodation in a young healthy person. As now we can see fine deposits on the anterior lens capsule, it should not be difficult to follow under slitlamp illumination, with the corneal loupe, the dropping down of the lens in this position.

We have to be on guard against wrong interpretations, and remember how Zeeman found, in Tscherning's laboratory in 1907, the existence of the posterior lenticonus, which Gullstrand interprets as a phenomenon due to the discontinuity zone in the posterior cortex; which we now all know, thanks to Vogt.

All manipulations with the eye must be taken with a grain of salt, as for instance von Pflugk's findings after freezing with liquid carbonic acid. The formation of ice in the anterior chamber liberates forces, the magnitude of which and their action are wholly unknown.

This is about what I would have said in the discussion at the Washington meeting, had there been time.

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ABSTRACT DEPARTMENT

Reprints and journal articles to be abstracted should be sent to Dr. Lawrence T. Post, 520 Metropolitan Building, St. Louis, Mo. Only important papers will be used in this department, others of interest will be noticed in the Ophthalmic Year Book.

Lagrange, Felix. Ocular Hypotony, Its Causes, Dangers and Treatment. *Archiv. d'Ophth.*, 1927, May, v. 44, p. 257.

Hypotony exists in more than a quarter of highly myopic eyes. It is caused by atrophy of the ciliary body and hyposcretion. The conditions induced by hypotony are central retinal disturbances, small retinal hemorrhages, detachment of the retina and cataract from impaired nutrition. The treatment is colmatage, which consists in producing a ring of scar tissue around the limbus to block the lymphatic return of the intraocular fluids. The most radical technic is to make a pericorneal incision thru the conjunctiva and then with the galvanocautery to cauterize the sclera in the region of the canal of Schlemm and at points back to the equator. In the posterior hemisphere ten percent saline is injected subconjunctivally. A second less radical procedure is to cauterize deeply the pericorneal region with the conjunctiva in place. The subconjunctival saline is also used here. There is an immediate rise in tension of short duration. Then it returns to the previous low level until after about the eighth month when the scar tissue has become dense, at which time it comes up to about normal and remains there. This treatment is recommended in myopic hypotony and especially where there is detachment of the retina.

M. F. W.

Schaly, G. A. Retinal Hemorrhages after Blood Transfusion. *Klin. M. f. Augenh.*, 1926, v. 77, p. 350.

Two cases of pernicious and two cases of aplastic anemia are reported. The patients complained immediately or a short time after transfusion of impairment of vision. The ophthalmoscopic examination revealed numerous retinal and preretinal hemorrhages. In the further course the effusion

which was red at first assumed a dark brown color and vision was not restored. One patient died after two weeks and another after a few weeks. Anatomically, hemorrhages were found to be preretinal and in all layers of the retina. Those that were examined before transfusion did not show intraocular changes, so that the hemorrhages must have occurred in connection with the transfusion, perhaps from slightly increased blood pressure. Three similar cases published by Sallmann (*Wiener med. Wochenschrift*, 75, p. 2554) are quoted. C. Z.

Howard, H. J., and Lee, T. P. Effect of Ephedrin upon Eye. *Proc. Soc. for Exper. Biol. and Med.*, 1927, v. 24, p. 700.

Experimental tests with ephedrin hydrochloride in solutions ranging from 1 to 10 percent were made on the eyes of fifteen individuals. Two drops of the solutions were instilled four times into each eye at intervals of five minutes. Observations were made continuously over periods of several hours. A distinct difference was observed between subjects with light irides and those with dark. In the subjects with light irides (all Caucasians) the mydriatic action of the drug was more prompt than in those with dark irides (all Chinese). Furthermore in the former the dilation of the pupil was wider, and the weaker solutions were more effective.

All the subjects complained of a stinging and burning sensation after the instillations, the degree depending upon the strength of the solution. The last drop caused about as much discomfort as did the first, confirming the direct test that no anesthesia developed. All developed a mild congestion of the superficial vessels of the palpebral and bulbar conjunctiva, which lasted for about twenty or thirty minutes. There also developed a pericorneal or ciliary injection, which was

quite marked in two subjects who had strong solutions instilled.

He concludes that ephedrin hydrochloride, in solutions from 1 to 10 percent is a mydriatic, quite uniform in action. The mydriasis lasts from 3 to 5 hours. It is more effective as a mydriatic in individuals with light irides than in those with dark. It has a slight or moderate cycloplegic effect, which passes off in an hour or two. When instilled into the eye it is somewhat similar in its physiologic action to atropin, homatropin and cocain, respectively, but its action is more like euphthalmin hydrochloride, altho not as prolonged. It seems to be the best drug available for use in making ophthalmoscopic examinations since its mydriatic and slight cycloplegic effects wear off so quickly. It is somewhat toxic when instilled into the eye in solutions stronger than five percent. A solution of two percent ephedrin hydrochloride is recommended for individuals with light irides and a four percent solution for those with dark irides. E. J.

Shimkin, N. Autoplastic Reversal of Tarsal Margin for Trichiasis. Klin. M. f. Augenh., 1926, v. 77, p. 538.

The margin of the skin of the lid with normally growing hairs is not influenced by the operation. Instead of skin of the lid or mucous membrane of the lip, the plastic material for the operation is a wedge shaped plate of the tarsus which with all hairs irregularly growing on it, is excised the whole length of the free lid border. This plate is turned 180 degrees around the vertical axis and replaced in its former position, so that all hairs which grew at the posterior edge of the intermarginal border downward and inwards are now turned forward and upward. If the whole intermarginal space is dense with false hairs they may be cut off in the whole length of the wedge shaped plate. The single phases of the operation are described and illustrated in detail. C. Z.

Busacca, A. (Firenze). Zonular Lamellae. Zent. f. d. ges. Ophthal. und ihre Grenzgebiete.

This article contains the following two personal, yet unpublished, observations:

1. With the silver impregnation of human material after Bielschowsky, fixed in Maximow-Levi fluid, embedded in gelatin and sectioned in frozen condition, the author could determine the existence of zonular fibers, outside the bundles, which are usually described, which expand at the surface of the capsule. These, contrary to the generally accepted idea, penetrate the interior of the capsule, where they can be followed in two-thirds of the exterior part of the capsule. Other bundles also penetrate the capsule, but remain in the most superficial layers. But circularly around the capsule in its entire extent the presence of a thin layer is demonstrated, which differs from the capsule and the zonular bundles in that it stains intensively black after treatment in gold chloride solution, so that it differs from the redviolet color of the rest of the tissue. This layer is more developed in the equatorial and periequatorial zone and appears here distinctly formed by bundles of wave like fibrils; zonular fibers attach to these, while the large bundles of the zonula which penetrate within the capsule, perforate this layer and only few fibrils from the most external fibers of these bundles expand on this.

This layer, which receives in that part of the capsule an important development, where the zonular fibers adhere to it, becomes gradually thinner the more distant it is from the periequatorial zone; the wave like windings of the fibers become sparser and more indistinct until the layer takes the appearance of thin cuticular formation, which is distinguished by its black color. The zone of the lens capsule, which corresponds to the pupillar field, has this same aspect. An identification of this cuticular with the zonula lamella as described by Berger and v. Retzius is not sufficiently well founded, according to anatomic and embryologic data.

2. The important comprehensive article of A. Vogt in the Klin. Mon. f. Augenh., 1925, is referred to. Herein Vogt describes a condition found in elderly people (12), 9 of whom had chronic glaucoma. A similar case was described by A. J. Bedell in "Contribu-

tions to Ophthalmic Science" and pictured in figure 3 and 4. Busacca examined 30 cases in the second half of 1926. The age of all was over 60. Twenty-three had chronic glaucoma. He examined two lenses in microscopic sections and found that he was dealing with precipitations of substances on the anterior lens capsule; in the lens the very thin cuticula formation described above was entirely preserved.

This finding of Vogt has nothing to do with the separation of the zonula lamella extended over the entire lens capsule surface. (The reviewer has never understood how this disease picture could be explained by a lamellar separation of the lens capsule. Observation here suggests some foreign material.)

E. E. B.

Rohrschneider, W. Swimming Tank Conjunctivitis. *Klin. M. f. Augenh.*, 1926, p. 619.

The author reports on 416 cases observed in the eye clinic in the University of Berlin. Inclusions were found in 22 cases, from which it appears that positive results are not likely to be expected in the third or fourth week of the disease. Infection by contact is not the usual manner of infection. One must suppose that the virus swims on particles of mucus in the water. Since not all bathers acquire the disease a certain predisposition must be assumed. Attendants state that as a common occurrence people urinate in the tank so that Engelking's view of a genital virus as an etiologic element of the epidemic may be true. Disinfection by chlorin gas with simultaneous filtration of the tank water is the most reliable method.

C. Z.

Richter, A. Insulin and Intraocular Tension. *Klin. M. f. Augenh.*, 1926, v. 76, p. 835.

From his experiments on rabbits the author found that insulin increases the normal intraocular tension for several hours. This is probably in consequence of decrease of blood sugar. A case is reported of a woman, aged 64, who had had diabetes, but had no sugar. After extraction of cataract on both eyes sugar appeared, necessitating administration of insulin. Soon violent glaucoma set in,

but after cessation of insulin treatment tension returned to normal. C. Z.

Cange, A. Trachoma, Blennorrhoea and Inclusions. *Gaz. des Hôp.*, 1927, v. 100, pp. 1073-1082.

The author first reviews the history of the discovery of the inclusion bodies, and then describes their morphologic characteristics, illustrating the four stages in their development. Admitting that these bodies are the actual cause of trachoma, the question arises are they really parasites? While some authors claim they are, others assert that they are the products of conjunctival activity. Even if they are parasites, are they specific? They are found in the majority of recent cases, but not in all, and are found less often in the later stages. Some authors claim that they are found only in the epithelial cells, never in the granules, and chiefly in the conjunctiva of the tarsus or the fornix, while others claim to have found them in the cells of the granules themselves. The weight of evidence seems to justify calling them the specific cause of trachoma.

The question, however, is complicated by the fact that these bodies have been found in the discharge in cases of nongonorrheic ophthalmia neonatorum. From this fact, the hypothesis has been advanced that trachoma was originally an infection from the genital tract which has acquired its present characteristics thru frequent transmissions. The truth of this hypothesis is denied, however, by other authors, who assert that the two are separate diseases.

C. L.

Butler, T. Harrison. Sympathetic Inflammation Associated with Intraocular Sarcoma. *Brit. J. of Ophthal.*, 1927, v. 11, p. 230.

This is the case record of a female, aged 20 years, who had a severe iridocyclitis in the right eye for five weeks and in the left eye for six weeks duration previous to observation. V. R. = fingers at one foot, L. 1/60. There were mutton-fat deposits in the corneae; tension normal. The patient did not continue treatment and was not again observed until eighteen months later. There were complete synechiae and the tension was greatly increased. The left eye be-

ing very painful was removed. The sectioned eye showed an unsuspected sarcoma at the posterior pole. Subsequently vision in the right eye rose to 6/12. The author suggests that the severe iridocyclitis was no doubt due to the liberating of toxins by the necrosing action of the sarcoma. The rapid improvement following enucleation strongly supports the idea of a sympathetic type. Fuchs' inflammation was not present and there were no cells in the aqueous. The case therefore cannot be classed as true sympathetic ophthalmitis.

D. F. H.

Volmer, W. Filaria Loa Removed from Lower Lid. *Klin. M. f. Augenh.*, 1926, v. 76, p. 807.

The patient, aged 42, who lived in West Africa from 1907 to 1914, had in 1908 edematous swellings of changeable sort. In 1913 he noticed a worm under the conjunctiva of the left eye, but had no opportunity to have it removed. The worm disappeared but in 1920 it reappeared under the conjunctiva and was removed. It proved to be a female filaria loa. The eosinophilia persisted. In 1926 he noticed the movements of a worm under the skin of the lower lid. After these had ceased the localization was difficult, but became clear after violent movements had been induced by the faradic current. Thru an incision into the subcutaneous tissue a male filaria was extirpated, 22 mm. long, 2 to 3 mm. thick.

The long interval between infection and the appearance of the filaria was remarkable, being at least 12 years. Its development from the larva is estimated at 3 years and its duration of life to be 13 to 15 years. A mongro fly, chrysops, transmits the infection. Leiper found loa larva in the salivary glands of chrysops, and Kleine found in West Africa over 5 percent of these flies infected with larvae.

In the meantime microfilaria were found in the blood of the patient beside the eosinophilia, so that this was probably not the last animal in his body.

C. Z.

Nakayama, N. Experimental Researches on the Tension in Intraocular Tumors. *Archiv f. Ophthal.*, 118 Band., 1927, p. 311.

A small piece of spindle cell rabbit sarcoma was inserted in the suprachoroidal space, into a pocket in the ciliary body or into the anterior chamber of the eyes of living rabbits. Of over 40 positive results the author reports 7 in detail and 25 in outline. Eyes with positive results from inoculation were removed soon after an increase of tension was demonstrated with the Schiötz tonometer. It was not found in a single case that an increase of tension was present when the tumor was essentially episcleral or extrabulbar. When the tumor growth blocking the iris angle involved less than half of the circumference of the iris angle, no increase of tension was caused.

In choroidal sarcoma, inflammatory changes of varying degree occurred hand in hand with the necrosis of the neoplasm. Inflammation of the choroid can cause the formation of a subretinal fluid rich in albumin which can lead to an increase of tension.

Sarcoma of the ciliary body very rarely caused an increase of tension in the author's experiments because of the rich blood supply in the ciliary body and consequent absence of necrosis and lack of inflammation.

The longest period of time for a glaucomatous increase of tension to appear after the inoculation of neoplastic tissue was 6 weeks.

H. D. L.

Banister, H., Hartridge, H. and Lythgoe, R. J. The Effect of Illumination and Other Factors on Acuity of Vision. *Brit. J. of Ophth.*, 1927, v. 11, p. 321.

The authors summarize their investigations as follows:

(1) An investigation was made on the effect of illumination on visual acuity (a) where the test objects subtended only a small angle and were viewed for a prolonged period, and (b) where the test objects subtended a considerable angle but were viewed for only a fraction of a second.

(2) By these methods we investigated the effect of intensity of illumina-

tion on visual acuity, (a) for normal sighted observers, (b) for normal sighted observers given defective vision by means of glasses, and (c) for observers with abnormal vision. In each case we found a clearly marked increase in visual acuity as the illumination was increased up to about 100 foot-candles. Beyond this intensity no further increase could be found.

(3) The range of 1-100 foot-candles covers that ordinarily met with in artificial illumination. An increase in the intensity from 1 to 100 causes only a two-fold increase in visual acuity.

(4) Artificial illumination of 2-4 foot-candles is most probably fully adequate for a variety of purposes.

For very fine work on the other hand, where the maximum visual acuity is required, an intensity of 100 foot-candles should be found adequate. D. F. H.

Fischer-Ascher, M. Malaria: Treatment of Tabetic Atrophy. *Klin. M. f. Augenh.*, 1926, Bd. 76, p. 102.

The author reports on malarial treatment of 18 cases of tabes with various degrees of optic atrophy observed for a year. After the treatment the pupillary symptoms were in all cases unchanged. In more than half of the patients vision and visual field remained the same. As malaria therapy may perhaps represent an improvement in our therapeutic measures we ought to subject to it especially recent cases of tabetic atrophy of the optic nerve, altho its influence on the basic process, the tabes, has so far been denied in several publications.

C. Z.

Heim, H. Protein Therapy of Gonoblennorrhoea. *Klin. M. f. Augenh.*, 1926, Bd. 76, p. 107.

Two cases of severe gonoblennorrhoea with corneal complications are reported in which injections of milk were not sufficient until injections of phlogetan yielded speedy recovery. Phlogetan comes in sterilized ampoules. It is injected in doses of from 1 to 10 c.c. It is stable and does not produce disagreeable symptoms.

C. Z.

Wirtz, R. Somnifen Anesthesia in Operation on the Eyeball. *Klin. M. f. Augenh.*, 1926, Jan. 76, p. 95.

The author found intravenous injections of from 2 to 4 c.c. of somnifen very useful in operations on the eyeball. The sensibility is diminished and the patient falls asleep, sometimes like in narcosis, but generally can be easily awakened. In 4 out of 76 cases the patients awoke during the night and were very restless, so that the doses had to be repeated. The author recommends somnifen anesthesia in excited unreliable patients, in complicated operations and in glaucoma operations which might be painful. C. Z.

Stanka, R. Plastic Work on the Cornea. *Archiv f. Ophthal.*, 1927, 118 Band., p. 335.

In the eye clinic at Prague, there had been 55 corneal transplantations involving the entire thickness of the cornea and 5 incomplete or lamellar transplants with Hippel's trephine, between October, 1921, and June, 1926.

A bacteriologic examination is made of the eye to be operated on and of the eye from which the transplant is to come. To avoid injury to the lens, eserine is instilled several times the day preceding the operation. After retrobulbar injection of 2% cocaine, a stay suture is passed thru the external rectus muscle of the left eye or if the right eye thru the internal rectus muscle. For fixation of the trephined flap a double armed suture is inserted above thru the conjunctiva near the limbus at two places, 2 mm. apart, then each thread is carried down over the cornea where the flaps will be and the two needles are inserted below 2 mm. apart in the conjunctiva adjoining the limbus. In the meantime the eye furnishing the transplant has been enucleated and the corneal tissue trephined. Now the cloudy disc is trephined from the first eye and the clear disc inserted. The fixation threads are then tightened and tied.

Of 50 cases operated on to improve vision, in 9 the trephined tissue remained clear, in 13 translucent and in 21 it healed with opacity; in the remaining 7 the transplant would not heal in place.

H. D. L.

Weekers, L. Ocular Phlyctenulosis and Tuberculosis (concluded). *Archiv. d'Ophthalmol.*, 1927, July, v. 44, p. 411.

In addition to the statistics quoted in the first article to prove that phlyctenules are tuberculous in origin, experimental work with rabbits shows that phlyctenules may be produced by dropping tuberculin in the eyes of tuberculous animals. It does not produce them in nontuberculous animals. Tuberculin instilled in the conjunctival sac of an individual who has suffered from phlyctenules will produce another attack. This is a tissue allergy to tuberculin in the tuberculous individual. Microscopically the phlyctenule shows no caseation and thus is not typical of a lesion caused by the bacillus itself but is a reaction due to tuberculin, dead bacilli or their products, or even nonspecific toxins, upon a conjunctiva sensitized by a general infection. These products may reach the conjunctiva thru the blood or the tears. All the evidence thus seems to support the idea that phlyctenules are an allergic reaction in a tuberculous individual to products of the tubercle bacilli and are an indication that the individual is developing an immunity to the bacillus of tuberculosis.

M. F. W.

Mukai, H. Gauze Filament in Anterior Chamber After Cataract Extraction. *Klin. M. f. Augenh.*, 1926, 76, p. 88, ill.

Four weeks after a cataract extraction a filament of gauze was detected on the thickened lens capsule. The healing was normal but there had been some irritation. The discussion was uneventful. The author cites some cases where a filament of wool or pieces of nickel from the instruments were found in the anterior chamber and urges care in that respect.

C. Z.

Chronis, P. Inflammation of the Orbit Cured with Injection of Vaccine. *Klin. M. f. Augenh.*, 1926, 76, p. 94.

A man, aged 25, came with orbital inflammation, periostitis of the orbital roof, exophthalmus, and chemosis. It was cured in three days after three subcutaneous injections of 4 c.c. of proprietary preparation (bouillon stock mixed vaccine), according to Delbert.

C. Z.

Morgan, O. Gayer. A Retinal Graticule. *Brit. J. of Ophth.*, 1927, July, v. 11, p. 339.

This is a description of an instrument which has been devised for the purpose of establishing a definite record as to size, position and interval changes of lesions in the fundus. The graticule consists of finely ruled millimeter squares subdivided into 0.2 mm. squares. This is mounted on a small slide which is so focused with the ophthalmoscope as to give a perfect definition of the squares on the retina. The lines are most clearly seen in the macular region, but can be easily counted in all parts of the fundus except on the disc. This indistinctness is due to irregularity of its plane.

D. F. H.

Cloff, H., and Korbsch, H. Vertical Deviation of the Eyes. *Klin. M. f. Augenh.*, 1927, v. 77, p. 618.

The right eye of a man, aged 59, deviated downward and inward, the left upward and outward. The movements of each eye separately were normal. There was nystagmus and paralysis of the right fifth, seventh, ninth and twelfth nerves and a corneal ulcer (from keratitis lagophthalmos).

The patient died from bronchitis. A softened glioma of the right cerebellar hemispheres extended to the right half of the pons and back thru the corpus restiforme into the medulla oblongata. The disturbances due to the change preceded the vertical divergence. In all sections the posterior longitudinal fasciculus was more or less damaged. This suggested that the phenomenon of Hertwig-Magendie consists in a disturbance of a certain ophthalmostatic mechanism: the paths of which run from the nuclei of the vestibularis over the posterior longitudinal fascicle and the coordination nuclei of the ocular nerves. The authors see a clinical proof of this in the conjugate deviation not infrequently associated with the phenomenon.

C. Z.

Maddox, Ernest E. Bearing of Stereoscopes on Relation Between Convergence and Accommodation. *Brit. J. of Ophth.*, 1927, v. 11, p. 330.

The author's conclusions are as follows:

1. If the pictures of a stereogram placed in the focal plane are closer together than the interval between the optical centers of the lenses, they cause forced esotropia.

2. When drawn nearer, this esotropia gradually lessens and becomes nil at a distance from the lenses equal to the interval between the pictures multiplied by a constant. Nearer still, exotropia enters, increasing with every approach.

3. In every fixed stereoscope, this constant can be found by dividing the focal length of the lenses by their optical separation. In the Holmes stereoscope, the constant is 2.24, so that the neutral distance for any stereogram is 2.24 times its own breadth from the lenses.

4. The longitudinal strip of the Holmes instrument can be graduated in this manner to save calculation, so that a stereogram of any breadth can be at once placed on its neutral seat if required, beyond which Con. is greater than Acc., and within which Con. is less than Acc.

5. For the training of an esotrope, the widest stereogram should be selected that can be certainly fused at the far end of the instrument, and it should be gradually caused to approach. For an exotrope, the narrowest stereogram should be employed that can be fused as near to the eyes as accommodation permits, and it should be gradually caused to recede.

D. F. H.

NEWS ITEMS

Personals and items of interest should be sent to Dr. Melville Black, 424 Metropolitan Building, Denver, Colorado. They should be sent in by the 25th of the month. The following gentlemen have consented to supply news from their respective sections: Dr. H. Alexander Brown, San Francisco; Dr. Wm. Thornwall Davis, Washington; Dr. Gaylord C. Hall, Louisville, Ky.; Dr. J. W. Kimberlin, Kansas City, Mo.; Dr. George H. Kress, Los Angeles; Dr. Edward D. LeCompte, Salt Lake City; Dr. W. H. Lowell, Boston; Dr. G. Oram Ring, Philadelphia; Dr. Charles P. Small, Chicago; Dr. G. McD. VanPoole, Honolulu.

DEATHS.

Dr. Alfred G. Kreutzer, of Milwaukee, aged fifty, died June twenty-ninth, of chronic nephritis and hemiplegia.

Mrs. Nelson Miles Black of Milwaukee died in August.

Dr. Edward Boeckmann, St. Paul, Minnesota, aged seventy-eight, died August eighth of heart disease.

Dr. Oakman V. Frederic, New York, aged fifty-four, died August third, of angina pectoris.

Dr. Frederick T. Clark, Westfield, Massachusetts, aged fifty-three, died August sixteenth from uremia and chronic nephritis.

Dr. Hubert Haywood, Raleigh, North Carolina, aged seventy-two, died August ninth, of uremia and hypostatic pneumonia.

Dr. George Hunter Price, Nashville, Tennessee, emeritus professor of ophthalmology at Vanderbilt University, formerly secretary of the Tennessee State Medical Association, aged sixty-eight, died August first of valvular heart disease and arthritis.

Dr. George W. Spohn of Pasadena, aged seventy, died July twenty-third.

SOCIETIES.

Dr. John M. Wheeler, of New York, was guest of the Eye, Ear, Nose and Throat Section of the Pennsylvania State Medical Society for the annual meeting in Pittsburgh, from October third to sixth, 1927, and read a paper on "Pulsating Exophthalmos." Dr. Stanley S.

Smith, of Pittsburgh, was chairman of this section, and Dr. G. E. deSchweinitz, of Philadelphia, read a paper on "Senile Changes in the Macula."

The Section of Ophthalmology of the College of Physicians of Philadelphia, met Thursday, October twentieth, 1927. The following program was given: Dr. E. B. Spaeth, by invitation, "The Mosher-Toti Dacryocystorhinostomy;" Dr. G. E. deSchweinitz and Dr. Perce DeLong, "Lantern Demonstration of the Various Types of Iritis and Iridocyclitis;" Dr. William Zentmayer, "Posterior Lenticonus;" Dr. G. Oram Ring, "Observations during a Recent Ophthalmological Clinic in Paris."

The first meeting of the season of the Chicago Ophthalmological Society was held on October fourteenth and was a joint meeting with the National Committee for the Prevention of Blindness. The speaker of the evening, Dr. Edward Jackson, of Denver, took the subject, "The Prevention of Blindness from the Standpoint of the Ophthalmologist." This meeting was a part of the three day conference the National Committee was holding in co-operation with the Illinois Society for the Prevention of Blindness. Other organizations participating in the conference were: the National Safety Council, the Illinois Social Hygiene League, the Illuminating Engineering Society of America and the Conference of State and Provincial Health Authorities of North America.

The recent meeting of the American Academy of Ophthalmology and Oto-Laryngology

in Detroit was well attended. About six hundred were registered and eighty new members were elected. This brings the membership to over 1300. Dr. Luther C. Peter was elected President, and Dr. H. P. Mosher, President Elect. A committee was appointed to investigate the so-called nonoperative cataract cures. Dr. Allen Greenwood was made Chairman of this committee. A connection was made of the Academy with the Crerar Library of Chicago, to establish circulating Ophthalmology and Otolaryngology books, accessible to members of the Academy only. The sum of five hundred dollars was appropriated for the National Museum at Washington, to defray some of the expense of laboratory work which they are doing for us. The instructional program, under the secretaryship of Dr. Harry Gradle of Chicago, proved to be the greatest success of the meeting. There were fifty-eight conferences held by as many different men. These conferences were wonderfully well attended and were spoken of on all sides as being most valuable. They will undoubtedly be repeated next year, with such modification as will still further enhance their value.

PERSONALS.

Dr. Wm. W. Blair has been elected president of the Pittsburgh Slit-Lamp Society.

Dr. Edward B. Heckel has been elected president of the Pittsburgh Ophthalmological Society.

Dr. Joseph Ivimey Dowling was recently elected president of the Eastern New York Eye, Ear, Nose and Throat Association, at Riverwood, Schenectady.

Dr. James D. Perdue, of Mobile, Alabama, has returned from Europe where he spent three months in Vienna and London studying the eye.

Dr. F. J. Pinkerton, Honolulu, is spending six months doing postgraduate work in the clinics in Europe.

Dr. Wm. C. Finnoff, of Denver, is spending three months in Europe. He expects to spend most of the time in Vienna.

Dr. William T. Davis, Washington, D. C., addressed the staff of the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, September nineteenth, on "Glaucoma."

Dr. Casey Wood has been elected an honorary member of the Charaka Club, New York, in recognition of his contributions to the history of medicine.

Dr. E. M. Howarth, who has recently completed a year in postgraduate work in New York, has become associated with Drs. Van Poole and Pinkerton, Honolulu.

Dr. Frank E. Burch, of St. Paul, Minnesota, delivered the Presidential address before the Minnesota Academy of Medicine on "Early Cataract Surgery."

Dr. James J. Richardson, Washington, D. C., has returned from the Canal Zone where he supervised the installation of the Eye, Ear, Nose and Throat Department of the new government hospital being completed at Panama City.

Dr. R. E. Robinson of Waverly, Iowa, sailed for Europe September tenth. He is doing postgraduate work in the form of a special course on ophthalmology in Vienna.

At the Academy meeting in Detroit, the golfers' prizes were won by Drs. George H. Thompson, North Adams, Massachusetts; George J. McKee, Pittsburgh; Harold Brown, Edmonton, Canada, and Melville Black, Denver.

Dr. and Mrs. Edward B. Heckel, of Pittsburgh, Pennsylvania, entertained at their country home, Ellmore Farm, Sunday afternoon, October second, in honor of Dr. and Mrs. Morris Fishbein of Chicago. Dr. and Mrs. Heckel also gave a tea on the following Tuesday afternoon as part of the entertainment provided for visiting ladies during the annual meeting of the Pennsylvania State Medical Society.

Dr. L. Webster Fox, of Philadelphia, has just returned home after several months spent on the Blackfeet, Hopi, Pueblo, and Taos Indian reservations. He reports that grattage and tarsectomy have reduced trachoma from thirty-five to five percent. Dr. Fox has recently sent out "Reports of Eye Clinics, Session 1926 and 1927, Medico-Chirurgical Hospital, Philadelphia." Four-hundred and fifty-five operations were performed in six months. From personal experience we know that this is a most valuable and instructive clinic to attend.

The Leslie Dana Gold Medal which is awarded annually to one who has done much for the conservation of vision was presented to Dr. Lucien Howe of Buffalo, at St. Louis, October 17th. Dr. Howe was selected by the National Committee for the Prevention of Blindness in cooperation with the Missouri Association for the Blind, thru whom the medal is offered by Leslie Dana of St. Louis. Dr. Howe has devoted more than fifty years to work having to do with the prevention of blindness.

MISCELLANEOUS.

In the Eldridge R. Johnson Foundation Research in Medical Physics, to be administered by the University of Pennsylvania, there will be a laboratory for studies in light and optics.

The Philippine Health Department, in the examination of 635 school children, in Mindoro, found the most common diseases were dental caries, tonsillitis and diseases of the eyes and skin.

It is suggested that any individuals who wish to subscribe to a fund for meeting the expenses of the Council of the International Ophthalmological Congress, communicate with Mr. Leslie Paton, Treasurer of the International Ophthalmological Council, 29 Harley Street, W. 1, London. Subscriptions to this fund are entirely voluntary, and do not confer membership in the Congress. Institutes, or societies subscribing two pounds or more will receive a copy of the Transactions of the Amsterdam Congress of September, 1929.

The Illuminating Engineering Society held its annual meeting at the Edgewater Beach Hotel, Chicago, October 11-14. One morning the committee held a joint session with the

Illinois Social Hygiene League, when "Bacterial Invasion of the Birth Canal" and "Syphilitic Eye Tragedies and Their Prevention" were discussed. The following morning there was a joint session with the National Safety Council, wherein the "Effect and Control of Injurious Invisible Light Rays in Industrial Occupations from the Medical, Research and Practical Shop Point of View" were discussed. Another afternoon and evening there were joint sessions with the Chicago Ophthalmological Society and the Illinois Society for the Prevention of Blindness. At two other sessions the general topics were sight-saving classes and trachoma as a public health problem.

OPHTHALMIC EXAMINATIONS.

The American Board for Ophthalmic Examinations has granted its certificate to the following applicants:

May 17, 1927.

Thos. C. Austin, Pasadena, Calif.
 Jas. A. Campbell, St. Louis, Mo.
 Clinton T. Cooke, Portland, Ore.
 F. A. Davis, Madison, Wis.
 M. Davidson, New York City.
 Wm. B. Doherty, New York City.
 Z. H. Ellis, New York City.
 A. G. Farmer, Dayton, O.
 E. F. Ferguson, Oklahoma City.
 L. R. Forgave, St. Joseph, Mo.
 E. B. Gresser, New York City.
 H. A. Kiefer, Los Angeles, Calif.
 D. D. McHenry, Oklahoma City.
 J. W. McKee, Kansas City.
 P. C. Moore, Cleveland, O.
 D. H. O'Rourke, Denver
 J. D. Perdue, Mobile, Ala.
 H. E. Peterman, Baltimore, Md.
 D. K. Pischel, San Francisco.
 J. M. Potts, Dallas.

Bernard Samuels, New York City.
 J. L. Scales, Shreveport, La.
 C. L. Smith, Spokane, Wash.
 U. S. Smith, Hannibal, Mo.
 W. A. Stoutenborough, Columbus, O.
 I. B. Winger, Toledo, O.

Sept. 12, 1927.

H. L. Begle, Detroit.
 L. H. Clark, Rochester, N. Y.
 L. O. Clement, Salem, Ore.
 E. N. DeWitt, Bridgeport, Conn.
 C. T. Eber, St. Louis, Mo.
 M. Edmunds, Petersburg, Va.
 M. L. Folk, Chicago.
 W. G. Fraser, Ottawa, Ont.
 W. G. Frey, Jr., New York City.
 A. D. Frost, Columbus, O.
 A. M. Goldman, New York City.
 J. N. Greear, Jr., Washington, D. C.
 O. R. Gullion, Eugene, Ore.
 A. S. Hale, Detroit.
 G. DeW. Hallett, New York City.
 LeG. H. Hardy, New York City.
 F. C. Harvey, Spokane, Wash.
 D. W. Henderson, Salt Lake City.
 H. F. Hill, Waterville, Me.
 W. F. Hoffman, Seattle, Wash.
 W. L. Hughes, New York City.
 A. Earl Jackson, Fort Worth, Tex.
 C. W. Jennings, Pittsburgh, Pa.
 V. L. Jones, St. Louis, Mo.
 L. L. Mayer, St. Louis.
 R. E. Meek, New York City.
 G. H. Poos, St. Louis, Mo.
 G. A. S. Ramsey, Montreal.
 Benj. Sachs, Boston.
 A. S. Schneider, Plattsburg, N. Y.
 C. W. Shannon, Seattle, Wash.
 W. L. Sheahan, New Haven, Conn.
 F. R. Slopansky, Salt Lake City.
 J. W. Smith, New York City.

Current Literature

These are the titles of papers bearing on ophthalmology. They are given in English, some modified to indicate more clearly their subjects. They are grouped under appropriate heads, and in each group arranged alphabetically, usually by the author's name in *heavy-faced type*. The abbreviations mean: (Ill.) illustrated; (Pl.) plates; (Col. Pl.) colored plates. Abst. shows it is an abstract of the original article. (Bibl.) means bibliography and (Dis.) discussion published with a paper.

BOOKS.

- Fasciculus Gratulatorius in Honorem K. K. K. Lundsgaard. Paper, 310 pages, 73 ill. Copenhagen, Levin and Munksgaards, 1927. Amer. Jour. Ophth., 1927, v. 10, p. 792.
- Favory, A. The chiasmic syndrome. Paper, 159 pages, 53 ill. Berlin J. Springer. Amer. Jour. Ophth., 1927, v. 10, p. 791.
- Lijo Pavia, J. La Tuberculosis en los Ojos. Paper, 177 pages, 41 ill., 5 col. pl. Amer. Jour. Ophth., 1927, v. 10, p. 790.
- Neame, H. and Williamson-Noble, F. A. Handbook of Ophthalmology. 312 pages, 12 pl., 41 col. ill., 194 fig. London: J. and A. Churchill, 1927. Brit. Jour. Ophth., 1927, v. 11, p. 539.
- Ovio, G. Scienza Colori. 567 pages, 19 col. and 180 fig. U. Hoeple, Malland, 1927. Klin. M. f. Augenh., 1927, v. 79, p. 288.
- Shastid, T. H. Give the People their Own War Power. Cloth, 12 mo., 220 pages. Ann Arbor: G. Wahr. Amer. Jour. Ophth., 1927, v. 10, p. 793.
- Wetterer. International Radiotherapy. Zeit. f. Augenh., 1927, v. 63, p. 126.

DIAGNOSIS.

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